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Original Communications.

ART. LIV.—ON CORNUS FLORIDA.

By Charles Ellis.

Nat. Ord. Corneæ.

Sex. Syst. Tetrandria Monogynia.

Cornus. *Calyx*, four-toothed: *Petals* four. *Stamens* four, alternate with the petals. *Drupe* not crowned; nut with two cells; cells two-seeded.—*Hooker.*

C. florida. Arborescent, leaves opposite, ovate acuminate, entire, ribbed; leaves of the involucre four, large, obcordate, nerved, white; flowers in terminal heads.—*Beck.*

Synon. Cornus arborea, involucro maximo, &c. Lin. Hort. Cliff. 38. 171.

Cornus mas Virginiana, flosculis in corymbo digestis a perianthio tetrapetalo albo radiatim cinctis. Pluk. Alm. 120. t. 2. f. 3. Catesb. Car. 1. t. 27.

C. florida. Lin. Spl. Pl. 171. Marshall. Arbust. Am. 14. Mich. Flor. Am. boreal. 1. 91. Nuttall. Gen. Am. Pl. 96. Eaton. Man. Bot. 108. &c.

Icon. Lin. Hort. Cliff. 38. S. 171. Pluk. Alm. 120. t. 2. f. 3. Catesb. Car. 1. t. 27. L'Heritier. Cozn. No. 3. p. 4. Mich. arb. Forest. 3. 138. Schmidt. arb. t. 62. Curtis. Bot. Mag. t. 526. Barton. Veg. Mat. Med. U. S. t. 3. Bigelow. Med. Bot. f. 28.

Common names. Dogwood. Boxtree. Dogtree. Great flowered Cornel, &c.

Pharm. Cornus florida. U. S.

Officinal. The bark. Pieces of various sizes, more or less rolled,

sometimes with a fawn coloured epidermis, sometimes deprived of it; of a reddish gray colour, very brittle, and affording, when pulverized, a grayish powder tinged with red. Odour very feeble; taste bitter, astringent, slightly aromatic.

Description.—This tree is found abundantly in the western and middle states, as far east as Massachusetts, in most of the southern states, and in Florida—wherever the soil is sufficiently moist and gravelly.

Its height is usually from fifteen to twenty feet, and diameter four or five inches, but the former sometimes exceeds thirty feet, and the latter nine or ten inches.

The branches which are not very numerous, are regularly disposed, partly opposite, and partly arising in fours. The leaves are about three inches in length, opposite, dark green on their upper surface, whitish underneath, and of an oval form. Towards the approach of winter, they change to a dull red colour.

In Pennsylvania and New Jersey the flowers are fully blown early in May, whilst the leaves are only beginning to unfold themselves. The flowers are of a yellow colour, small and aggregated, surrounded by a very large involucre, composed of four white floral leaves. This latter constitutes the great beauty of the flowers, which are very numerous; and the tree thus robed in white in the spring of the year, adds variety and ornament to the American forest.

The wood is compact and heavy, and susceptible of a fine polish; but the interior bark both of the root and branches, is that which enhances its value to the pharmaceutist. It is extremely bitter, and has been long used in the country as a remedy in intermittent fevers. As possessing remedial properties analogous to Cinchona, and as a substitute for that invaluable exotic in the autumnal fevers which prevail in the United States, it is considered by physicians who have employed it extensively in their practice, as being unsurpassed by any vegetable product, indigenous to this country. Several attempts have been made to analyze the bark—to ascertain if its virtues existed in a vegetable proximate princi-

ple; and about ten years since an essay was published by George W. Carpenter, announcing the discovery of a vegetable alkali, which he denominated Cornine. The process by which he obtained this new alkaline substance has never been published; and the quantity obtained is believed to have been small. Yet sufficient of the sulphate of cornine was furnished to several physicians of this city, to ascertain that it possessed unequivocal powers as a febrifuge—in some instances where quinine had entirely failed. Dr. Samuel G. Morton, in the 11th volume of Philadelphia Journal of Medical and Physical Sciences, gives a detailed account of the trials he made with it in the cure of intermittent fever. He describes the sulphate as of a grayish white colour, intensely bitter—deliquescent when exposed to moisture, and partially soluble in water.

A well written thesis by J. Cockburn, Jr., was published in the July number, present volume of this Journal, to which the reader is referred for the result of his experiments. He was unsuccessful, however, in obtaining any cornine.

In accompanying the present number of our Journal with a plate of this native of our forests, it is a source of regret that there is not sufficient time to prosecute the experiments further. My intention would have been to subject a portion of the bark obtained from the root, which is much the strongest, to the process generally adopted for the preparation of sulphate of quinia, viz.: by acidulated decoction, and precipitation by lime or magnesia, &c.; and to have endeavoured by this or other experiments to obtain some definitive results.

The fact that the Cornus Florida abounds throughout our country, that the bark of it both in decoction and powder has been extensively used in fevers, and in many instances much preferred to the cinchona, constitute the strongest reasons for a further investigation of the subject.

Since writing the above, I have conversed with Dr. Jackson, a very intelligent physician, of Northumberland, Penn., who informed me that he had been in the practice for many years, of using the dogwood bark in the treatment of intermittent fevers; and that as long ago as 1823, previous to any

analytic experiments being made with it, he subjected a portion of the bark collected from the root of the older trees, (which he esteems much the strongest) to the formula first published by M. Henri, Jr. for extracting quinia from cinchona bark; and that without carrying the process so far as to obtain a crystalline salt, he used the concentrated alcoholic solution, obtained from the precipitate thrown down by lime from an acidulous decoction, with the most decisive results as to its remedial powers.

This experiment was satisfactory evidence to his mind that the solution contained a vegetable principle analogous to quinia; but further research at the time was incompatible with his professional engagements.

ART. LV.—ON THE PRESERVATION OF MEDICINES.

By Augustine Duhamel, Graduate of Pharmacy.

The importance of the subject upon which I am about to treat, will be made apparent to every reflecting mind, as well as to the Apothecary, for whose perusal it is especially intended. Indeed, when we consider the situation in which we stand, with regard to the confidence reposed in us, by the community at large, the elevated rank we have attained in our profession, and above all the conscientious duty of relieving suffering humanity, it may be remarked as a matter of surprise, that so little attention has been given in this country to that branch of Pharmacy, relating to the proper, or best mode of preserving or keeping for a length of time in good condition, our medicaments. The able authors of the United States Dispensatory, in treating upon the subject of Pharmacy and its various branches, as connected with the cultivation and collection of medicinal substances, their preparation for

exhibition, and further preparation for internal administration, or outward application, have but slightly touched upon this point. That their observations are so limited on this head, is to be regretted, but as rules to determine the best manner of preserving drugs and medicines, can come only from a knowledge gained by long experience in the practice of this art, it is hoped that the *collaborators* of the American Journal of Pharmacy, some of whom are peculiarly fitted for it, from their long standing in business, will benefit science by the publication of the results of their experience.

It is to the interest of the Apothecary to keep always on hand, fresh and efficient remedies, for in addition to the confidence of Physicians reposed in him by this act, and consequent increase of reputation, his pecuniary interest is manifoldly implicated in it. But as is justly observed by M. Virey, and the author of a paper, I shall shortly allude to, "*the good preparation of a medicine, is but half of its value, if the art of preserving it, be not known.*" Unfortunately great ignorance prevails upon this subject among some of our coadjutors in other than the principal cities of the Union; and it is still more to be lamented that among them, are to be found, some whose speculative propensities, or mercenary spirit, lead them to practices which degrade the profession. It is that of looking more to the price than to the quality of drugs;—many of them in writing for supplies, which they generally procure, without personal attendance, from the wholesale druggist, limit the price, and leave the selection entirely to him; when received, whether good, bad, or indifferent, they are kept for use in a negligent manner, until all consumed, perhaps for a series of years, before they obtain another supply. This is the cause of many of our indigenous medicinal plants having been brought into disrepute: the Physician prescribes one of them, an Apothecary of the above description furnishes the article, probably inert from age and careless exposure, and the Physician finding it to fail in producing any effect upon his patient, at once pronounces the plant worthless, without searching into the cause.

I would not apply these remarks to the members of the profession in this city, who as a class amply deserve the confidence reposed in them by their fellow citizens; neither would I wish to reflect on the Pharmaceutists of our sister cities, many of whom are of acknowledged talent, and of the strictest integrity in the discharge of their duties. The only remedy against the evils complained of, lies in the establishment of a protective policy, or jurisdictional act, similar to those of Europe, some account of which has been published in the excellent address of the President of the College.

This paper is suggested by an essay published by Mr. Menigaut in the No. of the *Journal de Pharmacie* for August, 1835, entitled *Conservation et Reposition des Medicaments*, wherein he comments upon an article under the same head, by Messrs. Henry and Guibourt; he gives great credit to these gentlemen for the views they have taken of this subject, and enriches it by observations from his own experience. This essay which I at first intended only to translate, was found afterwards to treat of so many preparations that are not in use in this country, and was so incomplete as respects those peculiar to the American and English Pharmacopœias, that I thought it preferable to give a new article compiled from these essays, with such additions as my own experience would allow me to furnish. In the extracts which I shall give from Mr. Menigaut's paper, which is somewhat prolix, I shall follow the sense, without employing strictly the author's own words:

"Practising Pharmacy in a small provincial town, where the consumption of medicines is always limited, my attention has been necessarily directed, as well to their preservation, as to their preparation. I shall here detail the results of my experience.

Heat, light, air, and moisture, are the four great agents in the alteration of medicines. The great object of the apothecary should therefore be to protect them from the deteriorating influence of those agents, in the most effectual manner.

As mentioned by Henry and Guibourt, where there is no

moisture, no organic change can occur. The apothecaries' care should be to prevent the access of this, as much to avoid its primary effects, which are mouldiness, or other elementary modifications, as to prevent its secondary influence, which is the developement of a number of destructive insects, precursors, even more ominous of decomposition, than mouldiness itself.

Thus entire plants, or their parts separately from the root to the seed, ought to be very dry, shut up in impermeable vessels, screened as much as possible from the contact of light, and of a capacity proportioned to the quantity of matter. In my own establishment I always make use of boxes and bottles of such a capacity as to be emptied in a short time.

The preservation of roots, woods, leaves, flowers and fruits in general, require no other attention than that of putting these substances, very dry in vessels shutting as exact as possible, and least accessible to moisture. However, the necessity of opening them often; variation of temperature; atmospheric pressure acting in the interior of the vessel, the renewal of the air, and this air incessantly charged with moisture, which moisture by hygrometical affinity for organic matters, combines with and completely saturates them, all act in an injurious manner. Thence, the necessity of putting the same substance in contact with heat several times in the course of the year, and of enclosing it when perfectly dry in the same vessel previously well cleaned, and thoroughly dried. Without these precautions, the moisture extricated in vapour during the warm season of the year, not being able to escape, owing to the resistance of the sides of the vessel, falls down again upon the substance, and occasions a sudden alteration in it.

Change of colour, mouldiness, and increase of insects are never more frequent in substances, shut up in close vessels, than at the commencement of spring and during the course of the summer. This is why I have always used the precaution, at the end of March, of subjecting such substances as remained on hand during the winter to the action of heat in

a drying room (*Etuve,*) and this operation I repeat in the hottest part of June and July. The heat of the sun, is often sufficient at these epochs.

The roots most subject to be covered with mould as Althea; those most easily attacked by worms as Angelica, have been preserved as long as I have wished. The same may be said with regard to leaves, containing the most extractive matter, as Cicuta, Fumitory &c., and those of the most fugacious odour, as Balm, and Ground Ivy; they lost after a number of years, scarcely any portion of their green colour and delicate aroma."

In addition to what is here stated respecting roots, I would observe that in the large Pharmaceutical establishment of Mr. E. Durand, with whom I have been for the lapse of six years, and whose stock, from the circumstance of European Physicians and foreigners generally, resorting to him, embraces a large variety of medical herbs, common to the other side of the Atlantic, I have noticed during this period those most susceptible of decay, from mouldiness or attack of insects; among the roots are the Orris, Peony, the different Aristolochias, Tormentil, Squill, Liquorice, Colchicum, Dandelion, Fern, Burdock, &c. Many of these being seldom called into requisition, and kept in close glass vessels, that are as seldom opened, have undergone no evident change. Others, particularly indigenous roots in common demand, which are brought to the market in an imperfectly dry state, we have been obliged to examine from time to time. Upon these occasions it is usual with us to dry them by heat, then brush and finally replace them in clean and dry vessels.

As regard to leaves, and other medicinal parts of a plant such as we have coming for the most part, from the Shaker Settlement at New Lebanon, they need no other attention, than that of simply placing them in close drawers in a dry place. These plants it is well known, are pressed into a very compact form, and neatly put up in small packages, protected by strong paper envelopes. I have not found these to deteriorate by keeping. Though the form of the plant is lost by

pressure, they retain after a number of years their colour, and the odour and efficiency common to each. I must however except the Digitalis, which from the soil, manner of cultivation, or want of care in drying, has disappointed the expectations of our Physicians; even when well prepared, it has not proved as satisfactory in its effects as the European Digitalis. The latter should be enclosed in tin cases, and when in powder, in glass stoppered bottles; it is even recommended to be kept from the contact of light.

With reference to seeds, some of which have a tendency to spoil suddenly, from various causes, if no particular attention be paid to their condition, such as Carrot, Water Hemlock, (Phellandrium aquaticum,) Grains of Paradise, and Dill, with some of their congeners, it is worthy of notice, that Mr. Durand has had in his possession, upwards of twelve years, quantities of these seeds which are now in a remarkable state of preservation; this arises from their having been kept in glass bottles, while seeds, Cumin in particular, kept in drawers, were completely destroyed, a long time since.

Mr. Menigaut says, that no flower can be preserved a single year in good condition, without the precautions here urged, have been taken. He adds that with the care of drying, shutting them in close vessels, and repeating the dessication from time to time, he had preserved for several years, Lime tree flowers, (*Tilia Europea*) with all their aroma, and fine yellow colour; the Elder flowers although kept the same length of time, had acquired but a slight fawn yellow tinge; but the centaury (*Erythræa Centaurium*), red roses, coltsfoot, althea, and red poppy-petals, were well preserved, though gathered eight years.

Parts of some of these plants very easily change, as in the case of the poppy, and Arnica montana, but these may be preserved by the precaution indicated by Mr. Menigaut.

Mr. Menigaut then introduces the subject of the preservation of fruits, which are to be found in all the French Pharmacies. But in our large cities, they are not generally kept, on account of the convenience afforded in being able to pro-

cure them fresh from the Confectioners, when wanted for preparations.

The author gives his mode of preserving dates, jujubes, and almonds; the two first are not in use here; the latter, from the liability to a demand for almond emulsion is kept by most country apothecaries, to whom the following information may be interesting.

"In the month of October, 1828, I took about 20 lbs. of sweet almonds of the season, which I exposed for eight or ten days over a baker's oven to a temperature of 25 or 30° C., and when they were very dry and brittle I enclosed them yet warm, in six bottles of two quarts each, very clean and dry. I corked and sealed them carefully, and laid them upon shelves on a ground floor, seven or eight feet above the soil. Each following year I opened one of these bottles, and found the almonds as good, and as sound, as on the day when they were put up. I generally however, dry them well, and enclose them at the commencement of winter in large glass bottles with tin covers, and repeat the dessication upon the approach of hot weather. Almonds thus taken care of, easily keep two or three years without change."

Tamarinds should be preserved in a thick, well boiled syrup, then put away in jars, well corked, and tied over with bladder. Their condition should be examined from time to time, and the syrup replenished, as evaporation may render necessary. Mr. M. says:—

"Cantharides from their high price and active qualities, should be perfectly dried, both before and after pulverization, and distributed in glass vessels, well corked, and in size proportioned to the consumption."

He also says that it is useless to preserve them entire, and that they should be dried, particularly after pulverization, so that any moisture absorbed during that process, might not injure them afterwards. The same remarks are applicable to powdered squill.

Lozenges, if not perfectly dried, before putting away, are apt to moisten, and adhere together, but if previously well

dried and kept in glass vessels, and not in too large quantities together, they will remain unimpaired. The alkaline lozenges of soda, which are white when fresh made, should be kept as much as possible from the contact of air, or they will moisten and become yellow; this most commonly arises from the employment of a simple carbonate of soda.

Extracts are liable by keeping, to be covered with mould which is by some considered unavoidable; some assert that an extract loses none of its activity by mouldiness, and hence take no measures to prevent it; others with the view to oppose it, protect the upper surface of extracts by paper saturated with spirit of wine, which is but a temporary shield; or mix a portion of olive oil with them, during their preparation, which answers this purpose very well, and serves also to keep them of a proper consistence. The last may, however, be deemed objectionable, from their want of ready solubility.

The common method of covering extracts is by means of bladder or sheep skin. This does not prevent their becoming mouldy, nor does it preserve their consistence, for the extracts are sometimes found so hard as to be with difficulty separated from the pots which contain them, when it is necessary to make them up again, by means of a water bath.

When the alcoholic extracts of colocynth, jalap, and nux vomica, become hard, they may be rendered of a good consistence, without any trouble, by dropping some alcohol upon their surface, which gradually incorporates itself with them. Extracts should be kept in porcelain pots, with covers of the same material. A small one only should be kept for officinal use, and the remainder put away, after the manner recommended by Mr. M., in double vessels, in the first of which are to be put now and then a few drops of water. The imported extracts, principally German and French, are the best, and in greater demand, from physicians being able to depend upon their efficiency; and are much superior to those of this country, which are chiefly obtained from the Shakers. These last extracts from being entrusted to persons, ignorant of the first principles of chemistry, are often negligently prepared,

and sometimes burnt in the evaporation, which it is well known, constitutes the chief part of the preparation.

Mr. M. says that the fixed oils, liquid or solid, animal or vegetable, may be preserved as long as desired, with the simple care of keeping them in completely filled, and well corked bottles.

All the ointments undergo rapid alteration, giving rise to rancidity, which renders them unfit for use. They should not be prepared in large quantities at a time; and when the consumption is small, should be confined to a few only, of the most needful, such as simple, basilicon, tar, and mercurial ointments. The ointments of zinc, lead, and white and red mercury—the latter of which soon decomposes—are often kept ready prepared, and very improperly so, as the acridity peculiar to rancid lard, produces irritation when applied to sores. With simple cerate, two-thirds of the ointments in common use, may be prepared extemporaneously, by rubbing up with it in certain proportions, the different substances previously levigated. For this purpose, I find a glass muller and marble slab, more convenient and serviceable than a pestle and mortar. In this manner may also be prepared such vegetable ointments as stramonium, cicuta, and others, by mixing with cerate the finely powdered leaves, or what is sometimes recommended instead, and which may be used when the leaves cannot easily be obtained, good extracts of these plants.

"The essential oils from being used every day, are often exposed to the air, which changes them entirely. The only efficient mode I have found of diminishing this alteration, has been to mix them with an equal weight of alcohol of 36°. This alcohol, suitable to almost all essential oils, permits me better to fraction their use, and forms at the surface of the oil, a bath that isolates it from the air retained in the vessel, and greatly tends to its preservation. Oil of aniseed mixed in this way, has continued to crystallize as if it was unmixed, and implicating in its solidification, three-fourths of alcohol."

"All the syrups, with the exception of some acid or alcoholic, are very difficult to keep from the variations of temperature. It may be said, that fermentation is the only kind of alteration they experience, for I do not consider as such, the mouldiness that may be perceived upon their surface. On the contrary, it is worthy of remark, that mouldiness is a sure sign of non fermentation. In fact, I have never seen a syrup ferment when covered with mould; the one always appeared to the exclusion of the other, for as is well known, and as Baumé has observed, mouldiness changes nothing of the quality of syrups, since it is light and superficial. I often induce its appearance on syrups, which I purpose to keep for long time, or of which a quantity is prepared at certain seasons, as that of violets, and asparagus tops."

It is a fact deserving of being better known, that syrups prepared by alcoholic maceration after the manner recommended for our compound syrup of sarsaparilla, are not so liable to fermentation, and are of easy preservation. Mr. Durand has practised for a number of years past this mode of preparation, particularly for such syrups as are made from roots, abounding in mucilaginous matters, and which most readily ferment from contact with the air, as the compound syrup of squill, &c. When made in this way, the fecula and inert portions are got rid of, and besides producing a neater and more active preparation, it will keep for a length of time. So certain is the effect of the hive syrup thus made, that a few drops of it is sufficient to vomit a child, while it is often complained, that a teaspoonful of the syrup made in the ordinary way failed to act as an emetic. It is a mistaken notion, to attribute its certainty as some do, to alcohol contained in it, for the alcohol is entirely driven off in the evaporation.

Gum Arabic syrup, and all those made from fruits, rapidly ferment after a short exposure. They should be boiled to 31° Baumé, and if put, immediately after cooling, in bottles completely drained of the water with which they have been washed, then well corked, and afterwards placed in a cool cellar upon their sides, they will keep good. The test of ex-

perience has proved that syrups bottled while yet warm, are sure to give rise to mould, and as much as Mr. M. is disposed to encourage its formation, I am as little inclined to consider the value of a syrup enhanced by it; its appearance in syrups is certainly not calculated to win for it favourable opinions from our patrons.

Brown mixture, a kind of cough syrup, consisting of a saturated solution of extract of liquorice, united with gum Arabic, antimonial wine, and paregoric, was once a difficult preparation for me to keep; though several ways were tried to prevent it, it invariably turned sour after it had been made three or four days, until by the addition of an extra portion of paregoric, I succeeded in keeping it perfectly sweet for months together.

Lastly come the distilled medicinal waters, with which Mr. M. concludes his paper. It may be well to acquaint my readers, that in Europe, particularly in France and Germany, a great use is made of waters distilled from freshly gathered medicinal plants. They frequently employ the highly charged waters of lettuice, balm, savine, hyssop, cherry-laurel, lime tree flowers, and others, in the virtues of which they place the greatest reliance in almost every disorder. In the same manner are prepared their aromatic and perfumed waters; these, when freshly distilled, have a slight empyreumatic odour, which disappears after some time, leaving a finely perfumed water that improves by age. The properties of all these waters, are preserved with ordinary care in all respects, but that of clearness; they are subject to a deposition of mucilaginous matters, from time to time, in the form of a slight film, which obliges them to be filtered on these occasions.

The few aromatic waters made use of in this country which are the cinnamon, mint, orange flower, and fennel, and prepared by the suspension of their essential oils, through the intervention of magnesia, are as easily kept as made. But the rose water prepared according to our Pharmacopœia invariably becomes sour, from the alcohol contained in it,

leading to acetous fermentation. It is hoped, that the authors will amend the formula in their next edition of this work.

In conclusion I will remark, that much more might be said upon this subject, than the few observations here called forth, by the paper of Mr. Menigaut; but enough has been said to show the importance of this branch of Pharmacy, and it now remains for the more experienced to benefit their art, by giving the results of their experience, which will establish the truth of these remarks, or point out any errors.

ART. LVI.—MEDICO-BOTANICAL NOTICES.—No. VIII.

Janipha Manihot.—In addition to the particulars respecting this root, contained in a preceding number, the following, most of which are derived from the *Botanical Magazine*, 3071, will serve to complete the history of this valuable plant. The genus *Janipha* was separated from *Jatropha* by KUNTH, (Nov. Gen. ii, 85,) and has been recognized by most botanists. TOURNEFORT, ADANSON and POHL, had, however, bestowed on it the name of *Manihot*. It is stated by the last author to be a native of Brazil.

It has always been stated that there are two varieties generally cultivated, the bitter and the sweet, the first containing a poisonous juice, the other possessing no noxious qualities; notwithstanding these marked differences in their properties, they are precisely similar in their botanical characters, though they possess sufficient characters to enable cultivators to discriminate between them.

The juice of the manioc or poisonous variety will occasion death in a very short time, and was used for this purpose by the natives before the Spanish conquest. Dr. Fernier, of Surinam, made many experiments with it on animals, these died in about half an hour in great agonies. On dissection no marks of inflammation were visible, the influence of the poison being apparently spent on the nervous system. Thirty-

six drops were administered to a criminal, and caused an immediate sensation of almost intolerable agony in the stomach, followed by convulsions which terminated by death in six minutes. On dissection no alterations were observable, except that the stomach was contracted to half its natural size.

This poisonous principle is volatile, and is destroyed by the action of fire, hence the cassava made from the manioc may be eaten with impunity. The root is the basis of several kinds of fermented liquors, and an excellent condiment for seasoning meat, called *Cabion, or Capion*, is prepared from the juice. The leaves beaten and then boiled form a substitute for spinach, and the fresh root forms a good application to unhealthy ulcers.

Spix and Martius state that an acre of ground planted with manioc yields a greater proportion of food than six acres planted with the best wheat. In Brazil, after burning the felled trees, the land is planted with cuttings of the Janipha. In eighteen or twenty months, during which time the farmer endeavours to check the upward growth of the plant, by nipping off the leading shoots; the roots attain their full size. After three successive crops the land becomes exhausted and is abandoned.

Jamaica *Tapioca* is made, according to Lunan, (*Hort. Jam.*) from the sweet cassava, by grating the roots, washing and infusing in water, and evaporating the liquid so as to obtain a sediment like starch, which is thoroughly dried in the sun.

Sandal Wood.—The true sandal wood is furnished by the *Santalum album*, a native of various parts of India, but more especially of the mountains of the Malabar coast. That from the Sandwich Islands, and which forms so important an article of trade, is derived from a different species of the same genus, the *S. freycinetianum.* In New Holland five other species have been discovered, of which but little is known beyond their botanical characters.

The red sandal wood, or as it is generally called, red saunders, is the product of the *Pterocarpus santalinus*, and not

of a species of santalum, of which it possesses none of the qualities, being solely employed for its tinctorial properties.

Some commentators on the Bible have supposed, and with an appearance of probability, that the true sandal wood is the *Algum* of the Scriptures, used in the construction of Solomon's temple, (Hooker, *Bot. Mag.* 3235.)

In commerce it is often divided into red, yellow and white, according to the shade of colour, of which the first, which however, is never as dark as the red saunders, is the most valuable; the best pieces and those most highly prized as possessing the strongest smell, are from near the root.

Sandal wood owes its peculiar smell to the presence of a volatile oil, which is heavier than water, and readily concretes at a low temperature. It was formerly much employed in medicine, but has fallen into disuse, though it still enters into some preparations of the foreign Pharmacopœias, as compound syrup of rhubarb, &c.

Heracleum lanatum.—This umbelliferous plant, which attains a very large size in favourable situations, and is to be found in most parts of the United States, is considered by Sprengel as identical with the foreign *H. panaces*, a native of Siberia; Nuttall also states that it is scarcely distinct from the *H. spondylium*. Both of these have been employed for remedial purposes, but more especially the last, principally however as external applications to indolent tumours. The *H. lanatum* deserves the attention of the medical profession in an eminent degree. Dr. Orne, of Salem, in 1803, in a communication to the Massachusetts Medical Society, spoke of it in the highest terms as a remedy in epilepsy, and stated that three out of five cases of this disease in which he administered it were cured. At the same time it is evident, from his own admissions, that in all these the disease was not dependant on a primary affection of the brain, but that the epileptic symptoms were connected with a disordered condition of the digestive organs. He gave it in large doses both in substance and infusion. Its good effects as a stomachic and carminative are amply confirmed by other practitioners, especially in

dyspepsia, accompanied with cardialgia and flatulence. It should be noticed, however, that Dr. Bigelow is of opinion, that this plant possesses a virose character, and that it should be used with great caution, more especially when it grows in watery or moist situations; this agrees fully with what Decandolle says of the *H. spondylium*, and in fact is applicable to most of the umbelliferæ.

In Sicily it is said that the officinal Angelica, instead of being furnished by the *A. archangelica*, is the root of the *H. cordatum*. This is aromatic, blackish, and endowed with the qualities for which the true root is prized. R. E. G.

ART. LVII.—NOTE IN REPLY TO ART. IX. AND ART. XXVIII. AMERICAN JOURNAL OF PHARMACY.

By W. & L. Khrumbaar.

In the April number of this Journal we noticed a paper of Mr. W. L. Rushton, on "the adulteration of morphia," to which we appended a note stating that a full explanation of the subject should be given. This promise we made, relying upon the assurances of Mr. Cance, (a party even more interested than ourselves) that he would furnish us with such a statement as would refute all the charges made in the above paper.

Indulging the hope that he would enable us to lay a satisfactory exposition before the public, and wishing at the same time to afford him every opportunity in our power of defending his character as a chemist, we have deferred redeeming our promise. As however, the subject remaining in this situation has an injurious effect upon us, we find it imperative, in justice to ourselves, that the point at issue should be brought to some definite conclusion.

Mr. Cance having allowed so much time to elapse without supplying us with his promised refutation of the charges, no

other alternative remains for us, but to take such measures as may be in our power, to exhibit our agency in the business, and to exculpate ourselves from the imputation of an adulteration of the article, or of vending the same, knowing it to be bad.

We shall accordingly at the next stated meeting of the College of Pharmacy, make application for the appointment of a special committee of investigation—before whom we pledge ourselves to lay the whole matter open, leaving it for them to place the censure upon those that merit it.

ART. LVIII. PHARMACEUTICAL NOTICES.—No. XII.

Hydriodate of Ammonia.—Having been occasionally called upon for a new preparation—viz.: the combination of hydriodic acid, with ammonia, I send for the Journal, the process usually adopted in its preparation. There are two modes by which the same result may be attained, either by direct combination of the acid with ammonia, or by the decompotion of hydriodate of iron. By the former process, the salt is said to be white when first prepared, but speedily changing to yellow. The latter is the formula which I have used, and which is to be preferred as more simple and less expensive. The product of it has uniformly been of a pale yellow colour. It is prepared as follows:—

Take of solution of proto-iodide of iron, or hydriodate of protoxide of iron, prepared according to the formula published in Vol. 4, p. 287, of this Journal, Q. S. Add to it a solution of fresh carbonate of ammonia, in small quantities at a time, as long as any precipitate of carbonate of iron falls. Then carefully separate the carbonate of iron by filtration, and evaporate the clear liquor which contains in solution, the hy-

driodate of ammonia, over a water bath. The crystals obtained are of a yellow colour, very deliquescent and require to be kept in a close stoppered bottle. They are soluble in alcohol and in water. The preparation of it most in use is the ointment. The following is the recipe:—

Take of hydriodate ammonia ℈i.
Cerat. Simp. vel axungia ʒi.
M. ft. ung. s. a.

It has been found highly useful in glandular indurations and for other purposes, to which iodine is generally applied.

The product which I obtained in using 20 drachms of iodine, was only 8 drachms of the salt. CHARLES ELLIS.

Emplastrum Plumbi.—In the preparation of Emplastrum Plumbi, it is well known that water enters into chemical combination with sweet oil and litharge, and is essential to the formation of the plaster.

The following is a statement showing the exact increase in weight, derived from the addition of the water, beyond that of the other ingredients. The quantities given are those taken at the time the plaster was manufactured.

Olei olivarum	36 lbs.	6 oz.
Lythargyri	24 "	8 "
	60	14 oz.
Aquæ ad libitum,		
Increase in weight,	6	2
Product lbs.	67	

Showing an increase of 10 per cent. in weight; the plaster being well worked with the hands, and thus deprived of any water that might otherwise remain uncombined with it.

C. E.

Resin of Jalap.—The following mode of obtaining the Resin of Jalap, devised by M. Planche, although it does not afford as large a product as some others, gives a purer article and is less expensive.

The roots are to be contused, and placed in an earthern vessel with eight or ten times their weight of pure cold water. They are to be permitted to macerate for twelve hours, the liquid decanted, and the process repeated till the water comes away tasteless. The exhausted roots are then to be pounded in a marble mortar with a wooden pestle, till they are reduced to a thin pulp. During this operation much resin will adhere to the pestle, and is much increased in quantity by adding ten or twelve times its weight of water to the pulp. The whole is then to be expressed through a coarse cloth. The product is milky, and deposites a little resin and much starch. The resin adhering to the pestle and sides of the mortar is to be removed with an iron spatula, and placed in an earthern vessel. The marc is to be a second time pounded with an additional quantity of water, and any resin that separates is to be collected and added to the first.

The resin which is soft, and of a brownish gray colour, is far from being pure; it contains ligneous particles, a little starch and extractive. It can be purified by stirring it with an ivory spatula for some time in a large quantity of water, the starch, extractive and almost all the ligneous particles are then separated. This is completely effected by heating it with three times its weight of highly rectified alcohol, over a water bath, the solution is to be filtered and the resin precipitated by the addition of water. The product properly dried, is friable, transparent, of a greenish yellow colour, soluble without residue in absolute alcohol.

Kermes Mineral.—The following method of making Kermes mineral, for which we are indebted to Liebig, is said to afford a more beautiful product than any other.

One part of dried carbonate of soda is to be mixed with four parts of pulverized sulphuret of antimony, and the mixture melted at a red heat, taking care that no iron instrument be used to stir it. The melted mass, is to be poured out on a tile or marble, and when perfectly cold, reduced to a fine powder. One part of this powder is to be boiled for an hour in sixteen parts of water, in which two parts of crystalized

carbonate of soda have been dissolved; the mixture is then to be filtered and permitted to cool. The kermes preciptiates in the form of a heavy powder. The mother water is to be decanted and again boiled with the residue. This operation is to be repeated several times, and affords an additional quantity of kermes. This kermes is not to be washed in warm water, or it will be decomposed.

Butter of antimony.—M. Cottereau gives the following as the best method of making this caustic preparation:

Pulverized sulphuret of antimony, is to be treated with the hydrochloric acid of commerce, till the latter becomes saturated. The solution is to be filtered through pounded glass, then introduced into a retort, to the beak of which a mattrass is to be attached, and a gentle heat applied by means of a reverbatory furnace, until the fluid that comes over begins to concrete in the beak of the retort. The recipient is then to be changed, and the fire augmented, when the protochloride will distil over and concrete in the recipient. To remove it, it is to be melted on a sand bath, and poured into small bottles with large mouths, and ground glass stoppers.

R. E. G.

ART. LIX.—LECTURE INTRODUCTORY TO THE COURSE ON MATERIA MEDICA AND PHARMACY IN THE UNIVERSITY OF PENNSYLVANIA. SESSION. 1835—6. By George B. Wood, M. D.

[In presenting our readers with those parts of Dr. Wood's address which have a direct bearing on the subjects to which this Journal is specially devoted, we are convinced that they will receive both pleasure and instruction from it, and appre ciate our desire of giving it that wide circulation its merits so decidedly demand.]

Gentlemen—

You are aware that I have been chosen to teach Materia

Medica in this Institution. The first duty incident to the charge, is to introduce the subject to your notice, and to recommend it to your favour. For this purpose, I now address you. It is scarcely necessary for me to state, that Materia Medica is the science which treats of the history, properties, and relations of medicinal substances. Its origin must have been nearly coeval with that of disease. Pain seeks for relief no less than hunger for satisfaction; and the same combination of instinct and reason which discovers food for health, finds also medicine for sickness. No tribe of men is so savage and destitute as not to possess its list of remedies. But, in his ignorance of the laws of external nature, and of those which regulate his own system, the uncultivated man not unfrequently ascribes the cures he may have experienced or observed to wrong causes; and, in the apparent absence of any physical agent, often spares himself the trouble of investigation by an easy resort to the intervention of supernatural influences. Hence the Materia Medica of a people advanced beyond the lowest grades of barbarism is apt to be loaded with superfluities, and deformed by superstition; and in this state was the science at the date of its earliest records among the ancients.

Little remains to us of all that was written on the subject of medicines before the time of Celsus. This author, who lived in the first century of our era, and is celebrated as the most classical of the Latin medical writers, enumerates most of the substances then employed as remedies, and gives the ingredients of various compound preparations; but his notices are meagre, and, in general, simply therapeutical, and convey no accurate knowledge of the substances mentioned. The first work especially devoted to the subject of medicines was that of Scribonius Largus, written during the reign of the Emperor Claudius. It is the oldest Pharmacopœia extant, and presents the most precise information in our possession of the modes of preparing medicines then in vogue. After Scribonius, followed successively Dioscorides, Pliny, and Galen, of whom the first and the last may be considered as

the most celebrated writers upon medicines in ancient times. Galen, particularly, obtained a reputation and authority which have, perhaps, been unequalled in the history of the medical art. His dogmas speedily gained general credit from the ignorance of the age; and for the space of fifteen hundred years, his writings were almost unanimously recognized as a kind of medical Gospel, which it was heresy to dispute. He flourished in the second century, and was the last author upon the subject of medicines, particularly worthy of notice, among the ancient Greeks and Romans.

At no period of antiquity had the science of Materia Medica advanced beyond the mere rudiments. The catalogue of medicines was numerous, but abounded in superfluities, introduced either upon false experience or absurd theoretical opinions. Thus, resemblances or analogies in colour, shape, or other sensible property, between the medicine and certain parts of the body or certain products of disease, were supposed to have an important bearing upon its curative powers; and a mysterious influence naturally existing, or imparted by incantations or other supernatural agency, was believed to be possessed by various substances, which were worn as amulets about the body. Objects calculated to inspire disgust, fear, or horror, were thought to extend over the frame the same spells in which they held the spirit; and hence toads, reptiles, venomous insects, and even human bones received a place in the Materia Medica. Many of these absurdities, though long since banished from the schools, have found a refuge among the vulgar, even in the most polished nations, and, in various semi-civilized countries of the old continent, flourish in almost their pristine vigour. To most of us it may appear strange, that men of the least cultivation should ever have yielded to such absurd claims upon their faith; but no stretch of credulity seems too great for an intellect not carefully instructed in fundamental truths; and when we witness, among our own contemporaries, such extravagances as a belief in the almost universal virtues of a secret panacea on the one hand, and in the powerful efficacy of the trillionth of a

grain of silex on the other, our wonder is directed away from the peculiar folly of the ancients, to the general weakness and fallibility of the human intellect.

Abounding as the ancient Materia Medica did in superfluities, it was greatly deficient in remedies of real importance. Many of our most valuable vegetable medicines had not been discovered; very few from the mineral kingdom were used internally, and the whole circle of chemicals, now among the most efficient employed, was quite unknown. Pharmacy, or the art of preparing medicines for use, was not less imperfect, embracing only a few simple and uncertain processes directed to the preparation of external remedies, or of those compounds the chief recommendation of which was in the vast number of their ingredients.

But crude and imperfect as was the knowledge of Materia Medica possessed by the ancients, it was certainly preferable to that savage ignorance of this, as of all other sciences, which spread over Europe after the subversion of the Western Empire. For many ages, almost the whole continent remained submerged in a deluge of barbarism, with only here and there floating fragments of civilization, or isolated ruins rising out of the darkness to show what had before existed. The Arabians, who conquered the Asiatic and African provinces of the Eastern Empire, and established upon its ruins the throne of the caliphs, as they were originally less barbarous than the hordes of Germany and Scandinavia, were better prepared to adopt the learning, science, and arts of the conquered people. The writings of the Greeks were zealously studied, and their facts and opinions appropriated with an avidity little short of that which had led to the usurpation of their dominions. Bagdad became the seat as well of science as of Empire in the East. Medicine was cultivated with peculiar care; and the fame of not a few Arabian writers still endures, who treated with various merit upon the subjects of Materia Medica and Pharmacy. But with the merits of Grecian medicine, its errors, follies, and absurdities were also adopted; and to the present time, in some Mahomedan countries of the

East, the doctrines of Galen are admitted as implicitly as in the days of their greatest glory. The credit of the Arabians is not confined to the mere preservation of the knowledge of the ancients. They made considerable additions to the remedies before known, introduced various new processes, prepared the way for the effectual application of chemistry to the Pharmaceutical art, and laid the foundation of that distinction between the professions of Medicine and Pharmacy which has subsequently tended so much to the advantage of both.

With the lust of conquest, the Arabians carried with them the spirit of improvement also into the West of Europe; and their dominions in Spain became as distinguished for the cultivation of all the sciences of the age as their earlier empire in the East. This enlightened spirit spread even beyond their boundaries into the dark barbarism of the North, which their arms were unable to penetrate. Medicine was among the sciences which now returned to Europe from their long exile. Schools were established, a collection of works upon medicines was published, and practical Pharmacy began to take root in the more civilized portions of the continent.

It may be readily conceived, however, that both Materia Medica and Pharmacy were in a most imperfect state. Life had been breathed into them, and the embryo began to evince the organizing movements which were going on within it; but the soil in which it had been planted was yet too sterile to afford the food requisite for its rapid or perfect development. It was under these circumstances, that the conquest of Constantinople by the Turks, about the middle of the fifteenth century, opened the sources of a fertilizing flood, which gradually spread over Europe, and brought the languishing germs into energetic and productive action. The exiled Greeks carried into Italy the stores of ancient learning which had for centuries been locked up in the Eastern capital, and by teaching their language afforded a key which rendered these stores accessible. The spirit which had been awakened by the Arabians, thus found abundant materials for the employment

of its plastic energies. The recent discovery of the art of printing, came happily in aid of the impulse imparted to the human intellect. Gifted with wings which never wearied, knowledge, in a thousand forms, flew hither and thither over Europe, bearing into distant regions the riches of favoured spots without exhausting these, gathering every where in order every where to diffuse, and directing the energies of a whole continent into one united effort for improvement. Immense effects could not but result from such a movement. An impulse was given to the human mind, which has been propagated with almost constantly increasing vigour to the present times, producing in every age fruits which have astonished while they benefited the world, and promising to go on shedding its blessings throughout the indefinite future.

But with the knowledge of the ancients were revived all their follies and extravagancies. The intellect had remained too long inactive to be able to distinguish truth from the mass of error with which it was mingled, and the aroused appetite was too keen to reject even the husks and offal which were presented to it along with more wholesome nutriment. But the Materia Medica of the fifteenth century excelled that of the Greeks and Romans in the accessions which it had received from the Arabians, and in those which began to accrue from chemical research. The labours of the Alchemists added greatly to its resources. At first sight, it may appear incomprehensible that sagacious men should ever have engaged in that wild search after miraculous energies in the products of nature. But the human mind had been subjected to no discipline. Awakened from a long sleep, it beheld an infinity of objects moving before it, and dazzled by the unwonted splendour, could not at once trace that secret cord which bound the apparent confusion in a beautiful system of order. No wonder that some of the wild dreams which had been flitting past it for centuries, should, in the first moments of aroused consciousness, still cling to its recollections with the force of realities. The two strongest emotions of the human breast—the love of life and the lust of power—co-ope-

rated with the weakness of an unexercised intellect to blind the judgment to the truth. The hope of living for a thousand years, and of possessing wealth and consequently power beyond the reach of human conception, was too dear to the heart to yield to the feeble contradiction of a weak and bewildered reason. The elixir of life and the philosopher's stone, which were to be the instruments of gratification to these lofty wishes, did not seem to be impossibilities in a world, where nothing was known to be impossible which did not involve a contradiction. The zeal therefore, which sought these creatures of the imagination through every region of nature, is not in fact, surprising. It was amply repaid both in its failure and its successes; for the objects longed for, would, if attained, have proved a curse to mankind, while the numerous discoveries made in the progress of the search have proved a blessing. In digging for gold, the Alchemists, though they failed to find the metal, prepared the soil for the production of a more useful harvest. The resources of the medical art were greatly extended by their labours; and some of the most efficient instruments now employed in the treatment of diseases, had their origin at this period. The introduction of the antimonials and mercurials into the Materia Medica was an event which alone would illustrate an age.

The maritime discoveries of that eventful era contributed also greatly to enrich this department of medicine. Several new and highly important remedies were introduced into Europe from the new continent, and those derived from India, particularly the spices, became more abundant in consequence of their cheaper carriage by the southern passage.

Up to the close of the seventeenth century, we may consider that the process of accumulation, in relation to medicines, was steadily going on; and that, though some enlightened spirits had escaped from the bondage of authority and superstition, the great majority still adhered to the absurdities of past ages; and the Materia Medica, with its new accessions, retained most of its former vices and superfluities. At length, however, that intellectual craving which had followed

the inanition of a thousand years appeared to be appeased. The squeamishness of satiety succeeded; and asserted facts as well as doctrines began to undergo a closer scrutiny before they could be admitted. The process of digestion had commenced; and the judgment was too much occupied with the selection and appropriation of the solid and nutritious matter, to receive with complacence the same kind of heterogeneous mixture which had hitherto satisfied the taste. The philosophy of Bacon, which rejected all theory not based upon and supported by facts, and admitted nothing as fact except upon positive evidence, began to be received as the only legitimate guide in the search after truth. Under the influence of these principles, antiquity ceased to be venerable; and imagination was banished from science into poetry. An immense mass of rubbish, the accumulation of all preceding ages, was washed away in the operation of experimental inquiry; and the particles of pure gold which had weight enough to withstand the current, remained to reward the labors of the search. Magic, and astral influence, and all the host of imaginary powers which dwell in the strange, the disgusting, and the horrible, fled with ghosts and fairies before the new day which broke upon the human intellect. The removal of the weeds and rubbish which had choaked the sprouting sciences, now left a clear field for their growth. Botany sprang rapidly from its embryo state into a flourishing existence; and, in the accessions which it afforded to the Materia Medica, and the greater precision which it introduced into this branch of medicine, bore fruit sufficient to prove that it was not a mere ornament in the garden of knowledge. But it was from the wonderful improvements in Chemistry during the last century, particularly towards its close, that Materia Medica and Pharmacy experienced the greatest benefit. Not only were new and valuable medicinal compounds produced, but those already in use were rendered purer, and therefore more uniform in their action; the processes for the preparation of medicines were simplified, and brought under the direction of precise rules; certain principles

were established by which the pharmaceutist might conduct safely the numerous operations which could not be made the subjects of officinal formulæ; and a spirit was, to a certain extent, subjected to his commands, which, pervading all nature, and ruling every secret movement of unorganized bodies, became a powerful instrument in his hands for the purposes of improvement or discovery. Since the commencement of the present century, the advantages from this source have been constantly on the increase; and the discovery of the vegetable alkalies, and other active principles of medicinal plants, and of the modes of extracting them, will probably be considered hereafter as the foundation of a new era in our science.

I have thus presented you with a rapid and imperfect sketch of the origin and growth of that branch of medicine which it has become my duty to teach. It would afford me much pleasure to do justice to the numerous individuals, who by their writings or discoveries have contributed to its present flourishing state, especially those of our own country, and of this particular school, who have illustrated the subject of the American Materia Medica. But from this gratification I am precluded by the narrow limits assigned to a discourse like the present, and must content myself with referring you to my future lectures, in which the opportunity will be offered of giving to each individual due credit, in connexion with the particular improvement or discovery which may constitute his claim to distinction. At present it is more important that I should endeavour to impress you with a conviction of the great value of the Materia Medica, and thereby afford you the strongest inducement for entering zealously upon its pursuit. This is the more necessary, as the science of late has been somewhat undervalued. The current of medical partiality appears to have set strongly into the channel of Pathology. The successful cultivation of this science in France, the distinction attained by some of those who have prosecuted it most diligently, and the warm and contagious zeal which characterizes their writings, have kindled the emulation of some

of our ardent countrymen, whose enthusiastic convictions and impassioned eloquence have worked their usual effects among the young devotees of medicine. Attention has thus been diverted, in some measure, from the Materia Medica, and the effect has been greater, as the tendency of the doctrines inculcated is to produce an impression, that comparatively few remedial agents are necessary in the treatment of disease.

No error is greater than that which would limit the Materia Medica within a very narrow compass. It is true that the *general* indications for the use of medicines are not numerous, and may therefore be answered by a few remedies. But there are countless varieties in the circumstances of disease, dependent on the degree, peculiar nature, and complications of the morbid action, and on the habits, tastes, and dispositions of the patient, which modify the main indication, and consequently require some modification in the character of the remedy proposed. To meet these diversified calls of disease, nature has provided an equal diversity of means; and he who neglects to avail himself of the advantages thus afforded him, is guilty of injustice alike to his patient and himself. Let us suppose, for example, that, in a number of cases presenting different aspects, there may exist a coincident indication for the use of a cathartic. It is not allowable for the physician to meet this indication, in every instance, by the use of the same medicine. On the contrary, it is his duty to observe the peculiarities of each case, and endeavour to select the particular cathartic applicable to these peculiarities. Thus, if the symptoms requiring the use of purgative medicine be complicated with acidity of stomach, he will employ magnesia; if with hepatic derangement, calomel; if with general debility, rhubarb; if with febrile excitement, one of the neutral salts; and so on through a long catalogue of cathartics. The same remark is applicable to other classes of the Materia Medica; and it will be at once perceived, that, upon these grounds, the number of medicines at the command of the physician can

scarcely be too great, provided they possess the requisites of activity and diversity of power.

But in order that the practitioner may be able to select the remedy applicable to any particular case, it is obvious that he must be acquainted not only with the general character, but also with the minute peculiarities of the whole circle of medicines. It is not sufficient for him to possess an accurate knowledge of the seat of the *disease*, just views of its nature, and a clear insight into the indications for its treatment. All these will avail him little, unless he is at the same time enabled, from his familiarity with the properties of medicine, to select that which is calculated to answer the indications presented. He who neglects the study of Materia Medica, under the impression that it is inferior in importance to those branches of medicine which have a more immediate reference to affections of the system, may become a profound physiologist or pathologist, but will be an inferior practitioner; and it has been observed of those who have devoted themselves with a partial zeal to the study of disease, that they are not always the most successful in its treatment.

But a knowledge of the remediate powers of medicines is not all that it necessary. The physician should also be acquainted with their characteristic sensible properties, in order that he may recognise them when placed before him; with the signs of their purity and efficiency, that he may avoid imposition in their purchase; with their various chemical characters and relations, that he may escape the disappointment which must result from the joint use of incompatible substances; finally, with the modes of most advantageously combining and preparing them, that he may avail himself of every modification in nature and form, which the palate or stomach of the patient, or the peculiarity of his disease may demand. They who give due weight to these considerations will, I am convinced, join me in the sentiment, that the study of Materia Medica cannot be deemed of little importance, or postponed, with impunity, to that of any other branch of medical science.

I am fully aware, that when speaking of a favourite pursuit, especially when attempting to recommend it to the attention and affections of others, it is difficult for the lecturer to avoid what may seem to the audience a tone of exaggeration. Perhaps I may be guilty of this fault in stating my impression, that, in addition to the claims which may be urged for the Materia Medica, on the score of importance, to a high station among the medical sciences, it possesses, when properly taught, a degree of interest to an inquiring mind, which might compensate for some deficiency in real value. It must be admitted that the study of medicine is considered by many as dry and forbidding; and is therefore entered on with reluctance, and, after the attainment of a superficial knowledge, abandoned with pleasure. Perhaps, however, this is as much the fault of the mode of instruction as of the subject itself. Materia Medica is, to a certain extent, a demonstrative science. The student who merely reads or hears a description of certain medicines, without having them before him, can form no definite or satisfactory notion of their sensible properties, and finds great difficulty in properly discriminating them in his own mind. Upon hearing the name of some one of them mentioned, he may remember that it is cathartic, or diuretic, or diaphoretic, that it produces particular effects upon the system, and is administered in certain states of disease; but he has rather the description before him than the object itself, of which he has no picture in his memory. His recollections are uncertain and indistinct, as they are not aided by any impressions on his senses, nor any vivid associations. But if, as in other demonstrative sciences, the object be presented to him, so that he may test by the evidence of the sight, and taste, and touch, the accuracy with which it is described, and make himself familiar with all its obvious characters, he will soon feel himself on the footing of an acquaintance, and will experience a curiosity to know it more intimately, to learn its history and external relations, precisely as we all take a much greater interest in the affairs of an individual whom we have

personally met with, than of one who is known to us only by reputation. The Materia Medica, therefore, should always be studied and taught with the individual medicines before the student; and this not only in their entire state and ordinary form, but in all the varieties in which they are found in the market, and in all the states of preparation to which they are officinally brought.

Other sources of interest exist from which the teacher may draw liberally without dimininishing the value of his instruction. A continuous detail of facts, which, from the necessity for their remembrance, demand close attention, often becomes excessively fatiguing by keeping the mind constantly on the stretch. In the Materia Medica, frequent opportunities are offered of intermingling with the description of the medicine narratives of its original discovery and therapeutical application, and various circumstances with regard to the plant producing it, the mode of its collection, and its commercial history, which, as they are not essentially important, allow of some relaxation of the attention, and thus refresh and invigorate the mind for new efforts. Nor can the impression which such narratives may leave on the memory of the student be considered as altogether unprofitable. They do not enable him to cure disease with greater facility; but they augment his fund of pleasing reflection by connecting with the substances which come under his daily notice a numerous train of associations, afford him the means of appearing to greater advantage in social intercourse by increasing his conversational resources, and give that kind of pleasing relief, in the eyes of the world, to the solidity of his professional knowledge, which the column in Grecian architecture receives from the ornaments about its capital.

It is a great mistake to suppose, that no other knowledge is requisite for the accomplished physician than that which is essential to the mere physical management of disease. In any pursuit or business whatever, an exclusive devotion to one train of thought, has the effect of narrowing and cramp-

ing the character, of incapacitating for liberal and impartial views of the relative importance and mutual benefit of the various occupations of social life, and of producing not unfrequently a ludicrous pedantry or offensive contemptuousness of manner, that tend very considerably to restrict the limits, within which any peculiar skill derived from such exclusiveness of devotion can have the opportunity of displaying itself. To our profession the warning suggested by this remark is especially applicable. We may be said to live upon opinion. In most other occupations confidence in superior skill will go far towards counteracting the influence of repulsive traits of character and manner; but the physician comes so often into contact with those who employ him, enters so intimately into all their privacies of feeling, opinion, and social connexion, is so blended in the mind of the patient and his friends with their hopes and fears, joys and regrets, that the conviction of his supremacy in skill must be absolute, and the supposed necessity for his interference extreme, before persons to whom his character and manners are repulsive, can be induced to place themselves in his hands. It behoves us, therefore, to cultivate all those kinds of knowledge which can enlarge, liberalize, and adorn our minds; giving, however, a due preference to such as is more especially requisite to qualify us for the practice of our art, and taking care that the tracery which we throw around the structure of our professional knowledge be not so abundant, nor so improperly arranged, as to conceal the main edifice from the public eye.

Harmony in intellectual attainment is always desirable. An individual who seeks the public patronage in a certain line of occupation, should endeavour, in the acquisition of knowledge not strictly connected with his duties, so to shape his studies as to maintain some relation between them and his chief pursuit; so that his literary or scientific culture may not appear too glaringly contrasted with his profession.

Applying these remarks to the Materia Medica, we shall be prepared to admit, that the species of knowledge before

alluded to as appropriately occupying a portion of the lecturer's attention, is not only admissible as a relief from the more essential and laborious parts of the study, but is positively useful to the learner by the influence which it contributes, with other analogous information, to exert upon the character of his mind, his social standing, and even his professional reputation.

ART LX.—ON AN ADULTERATION OF SULPHATE OF QUININE, By John Farr. AND A REPORT OF THE COMMITTEE OF INSPECTION.

A short time since, a quantity of French sulphate of quinine, was sent to our laboratory to be recrystallized, and purified from fragments of broken glass, sealing wax, &c., with which it had become mixed by the breaking of the vials, in which it was packed.

On attempting to dissolve it in water, a considerable portion of white powder separated, and remained insoluble; the precise quantity could not be ascertained by reason of the glass, &c., with which it was mixed. With a view to ascertain this, a fresh portion of the sulphate was obtained from the same source, which was subjected to the following experiments:

The article was put up in one ounce vials, and bore the seal label of Delondre, Nogent, near Paris. On the label certain tests were given for detecting adulterations. The first of these, viz: its solubility in boiling alcohol was employed; 50 grains were boiled in a florence flask, in one ounce of alcohol of ordinary strength, and suffered to stand a few moments to allow the precipitate to subside, the solution of quinine was then poured carefully off, and the insoluble precipitate washed with boiling alcohol on a filter, until it ceased to be bitter; the precipitate remaining on the filter, when dry, weighed 6 grains.

Fifty grains more well boiled in four ounces of water, and the clear solution poured off, the precipitate was again boiled in a fresh portion of water, washed on a filter and dried; the precipitate weighed 6½ grains.

In water acidulated with sulphuric acid, nearly the whole dissolved on boiling it a few minutes.

With a view to ascertain the precise quantity of pure quinine contained in the article, 50 grains were dissolved in boiling water; when nearly cold, water of caustic ammonia was added until all the quinine was precipitated, which being collected on a filter, washed with a small quantity of water, and carefully dried with a gentle heat gave 33½ grains, indicating 84 per cent. sulphate of quinine, or 16 of impurities. Taking M. Robiquet's analyses of sulphate of quinine as correct, which the decomposition of 3 or 4 different portions justify me in doing, the two articles will stand as follows:—

Pure Sulphate Quinine.		Delondre's.	
Quinine,	79	Quinine,	67
Acid,	11	Acid,	9.3
Water,	10	Water,	8.5
		Impurities.	15.2
	100		100

It is gratifying to me to learn, that my friend Mr. Durand, to whom a portion of this article was sent, confirms the results of most of my experiments.

While manufacturers or venders, can be tempted by the hope of gain to vend impure or adulterated articles, the only remedy for the evil must be found with the retail apothecary, through whose hands the articles finally pass: let him acquaint himself with, and apply the test, and the evil cannot long exist. To enable every apothecary to test the purity of sulphate of quinine, I would suggest the following simple experiments: First, try its solubility in boiling alcohol, 50 grains if pure will dissolve perfectly in one ounce of boiling alcohol. Should it be found to dissolve perfectly, and not speedily deposite crystals, the result is satisfactory. Then let 50 grains more

be boiled in four ounces of pure or rain water, if this also forms a clear solution in its boiling state, add 5 or 6 drops sulphuric acid to convert it into a super-sulphate, which is much more soluble; let it stand in the flask till nearly cold, then add caustic water of ammonia gradually, until it ceases to give a precipitate. Collect the precipitate on a filter, and wash it with a small portion of water, and carefully dry it at a low temperature, not exceeding 100,° lest it run into a mass. Weigh the precipitate, which is pure quinine, and if the sulphate was pure should amount to 39½ grains, any deficiency, if the experiment has been carefully conducted indicates the amount of impurities. Neither of these experiments are sufficient alone to establish the purity of the article, yet the successful result of the two will be sufficient to establish it; and one or both, will detect any article (so far as my knowledge extends) that would be likely to be found mixed with it. In all these experiments, the sulphate of quinine is spoken of in its dry crystalline state; if the article has become effloresced by exposure to the air or heat, 10 per cent. must be deducted for the water which it has lost.

It is better to dry and balance the paper before it is used to filter with, and then should the quinine become fused by heat, the result can be equally attained, deducting for the weight of the paper.

To the Board of Trustees of the Philadelphia College of Pharmacy.

Since our recent appointment by the Board, there has been submitted to us for examination, a sample of sulphate of quinine, containing a considerable quantity of impurity. This article was put up in one ounce vials, and bore the label and seal of Delondre, Nogent, near Paris. A large quantity of it in broken vials was sent to Farr & Kunzi, operative chemists of this city, for the purpose of having it recrystallized—and the impurity was thus discovered by them.

The following are the results of our examination:

The appearance and taste of the article were fair; it was imperfectly soluble in boiling water and alcohol. Tests for fecula, sugar and stearine, negative, as well as for the presence of cinchonia. One hundred grains were treated with boiling alcohol, thrown on a filter and repeatedly washed with warm alcohol. The residue which was left on the filter, insoluble in alcohol, was carefully dried and found to consist of a dull white powder, without bitterness, and weighing about 12 grains. The alcoholic solution evaporated to dryness over a water bath, afforded 85 grains of a crystalline matter—having all the characteristics of pure sulphate of quinine; a part of this last subjected to Phillips' test, with salt of barytes (nitrate or muriate) indicated the presence of the requisite proportion of sulphuric acid. Fifty grains more of the same sample were treated with boiling water, and the filter carefully washed as above. The dry residue weighed 6 grains. The residue of both solutions afforded the same indications as to taste and colour. Both dissolved readily in dilute nitric and muriatic acids, but sparingly in sulphuric. The solutions were all precipitated by carbonate of potass, by ammonia and its oxalate. The liquor precipitated by this last reagent, having been immediately filtered, showed a second precipitate by the addition of solution of phosphate of soda; thus indicating the presence of both lime and magnesia. Five grains of the impurity subjected to a red heat for about ten minutes, were reduced by incineration to three grains of a grayish powder, containing visible particles of charcoal.

From these results we should conclude that this sulphate of quinine contains from 12 to 15 per cent. of impurities, consisting principally of insoluble vegetable matter, lime and magnesia.

The committee are unwilling to pronounce this article as intentionally adulterated by the admixture of foreign matter, for the purpose of defrauding the public. It has probably been the result of careless manipulation; the impurities may have remained in the liquor with the sulphate of quinine from

imperfect filtration, been evaporated with it and thrown into the market, without due attention on the part of the head manufacturer.

We are aware of the objections that suggest themselves to this view, from the distinct acicular crystals which the sulphate of quinine will form—generally indicating, if any, the presence of foreign matter. But in addition to the close examination which we have given the subject, the circumstance of its bearing the seal and label of a respectable house induces us to suppose it may be either the result of great carelessness or wilful imposition, first practised upon M. Delondre himself by the operative chemist whom he employed for this product.

A similar kind of imposition occurred with a very respectable house in this city, by their placing entire dependence for the purity of a vegetable alkali, upon their foreman, by whom they were deceived. We hope these circumstances will prove how cautious the manufacturers should be in the choice of those to whom they confide their operations, and how careful in testing all the products prepared by other hands in their employ; otherwise they will find the reputation of their establishments will suffer considerably by this want of proper attention; for it is the determination of our apothecaries to expose all impure articles that may be found in the market.

CHARLES ELLIS,
E. DURAND,
JOHN C. ALLEN,
} Committee of Inspection.

Philadelphia, 12 Mo. 22, 1835.

Selected Articles.

ART. LXI.—ON THE PREPARATION OF THE IODURET AND HYDRIODATE OF IRON. By A. T. Thomson, M. D.

Precautions necessary in the preparation of the Ioduret and the Hydriodate.—One part of the iron wire should be rubbed in a porcelain or a Wedgwood's mortar, with about three or four parts of iodine, gradually adding distilled water, until fifteen parts of the fluid shall have been used: the whole is then to be introduced into a Florence flask, with an additional portion of iron wire, and of distilled water. This excess of iron is a matter of indifference in the preparation of the hydriodate; and, in that of the ioduret, it is necessary for preserving the combination from decomposition, during the evaporation of the solution. These materials are next to be boiled together, until the fluid acquire a pale greenish color, when it should be filtered. This solution contains a hydriodate of the protoxide of iron; and, if the exact quantity of the iodine be previously ascertained, so as to enable us to procure the solution of a definite strength, it may be kept in this state for medicinal use. In general, however, the solution is evaporated to dryness; and for this purpose it may be poured into a clean flask, containing a piece of iron wire sufficiently long to reach from the bottom to the surface of the fluid, and the boiling should be continued until the bulk of the solution be reduced to one-third. It must then be filtered: after which the evaporation should be continued to dryness. It is necessary to break the flask as soon as the mass is cold, in order to obtain the solid ioduret, which should be immediately transferred to a dry bottle, fitted with an accurately ground stopper. The bottle should not hold more than two ounces of the pre-

paration; for, when it is large and not full, the ioduret deliquesces nearly as rapidly as when it is exposed to the free action of the atmosphere. When the flask is broken and the ioduret bottled before the mass is cold, deliquescence also takes place; a peroxide of the metal is formed, and iodine is evolved.

Precautions necessary for preserving both Preparations.—The ioduret requires to be well secured from the influence of the atmosphere; both on account of its deliquescent property, the rapid oxidizement which the iron undergoes when deliquescence occurs, and the consequent decomposition which takes place. It is important to prevent this state of things, as the peroxide of iron is inert as a medicinal agent; whilst the free iodine, extricated during its formation, alters altogether the virtues of the medicine. This partial decomposition of the ioduret is rendered immediately apparent, on dissolving it in twenty times its weight of distilled water and filtering; instead of a permanent, clear, very pale greenish yellow, we obtain an ochre-colored or brown solution, which soon becomes turbid, and gradually deposits an ochre-coloured completely insoluble precipitate. Much of the ioduret usually prepared both by many chemists and druggists, and also general practitioners, is of this description; and to this we may refer some of the disappointment and discrepancy of opinion of different practitioners respecting the operation of the medicine in similar cases. Even when the ioduret has been carefully prepared, and is good of its kind, it often contains a little free iodine; but it is chiefly owing to the carelessness of assistants and apprentices, in compounding prescriptions, by frequently exposing the ioduret to the air, that its properties, and consequently its medicinal powers, are impaired; hence, it is preferable to keep it in solution, or in the state of the hydriodate.

If the solution be prepared with a definite quantity of iodine, as already described, it will keep without changing its characters; but, as it is usually made by dissolving the ioduret in distilled water, it requires to be rendered neutral by the following means. Introduce into a flask, the solution of any

given strength, and place in it two or three doubles of clean soft iron wire, sufficiently long to extend to the surface of the fluid; boil it for a few minutes, and then leave it at rest until the solution becomes clear, after which it may be either decanted off from the precipitate which forms, or filtered: no farther change takes place in a solution thus treated if it be kept in a blackened or a green bottle, however long it may be preserved. In this process, the wire affords iron to saturate any free iodine present in the solution, or that may have been extricated by the formation of the peroxide of iron in the ioduret; and a perfectly neutral solution being thus obtained, by the immediate conversion of the new formed ioduret into the hydriodate of the protoxide, no subsequent change takes place so long as the solution is kept secluded from the light. It is not easy to explain this influence of light in decomposing the solution of the hydriodate of iron; but several others of the metallic hydriodates are affected in the same manner by light. The best proportions for forming the medicinal solution are three grains of the dry solid ioduret to each fluid drachm of distilled water. If the water be not either distilled, or filtered rain water, perfectly free from foreign ingredients, particularly if it contain any earthy or saline carbonates, decomposition instantly takes place, iodine is extricated, and a carbonate of iron, which rapidly passes into the state of the peroxide of that metal, is precipitated.

Physiological Effects of Hydriodate of Iron.—"When taken in doses of from three to five grains, the hydriodate of iron makes no sensible impression on the stomach, although it sharpens the appetite and improves the digestive function; it seems to stimulate moderately the intestinal canal through its entire length, as it opens the bowels; and whilst it produces the black color of the alvine discharges characteristic of all the preparations of iron, it corrects their fœtor. When it does not affect the bowels, it augments the action of the kidneys, increasing the flow of urine; and if the solution be taken two or three times a-day, for several days successively, the presence of both the iodine and the iron can be readily

detected in the urine. The temperature of the skin is moderately elevated, and the insensible perspiration increased. On one occasion, having taken ten grains for a dose, it almost immediately caused an uneasy sensation at the epigastrium, accompanied with nausea that continued for several hours; and a slight degree of head-ache. These symptoms were relieved by a copious stool, which was perfectly black. Two hours after swallowing the medicine, a large quantity of urine was discharged; and on being tested, it displayed the presence of both the iodine and the iron.—*Am. Journ. Med. Scien.*

ART. LXII. ON THE EMPLOYMENT OF THE PROCESS OF DISPLACEMENT IN PHARMACEUTIC PREPARATIONS. By M. A. GUILLERMOND.

A PROCESS long made use of in certain arts for the purpose of extracting the soluble principles of a substance, with the least possible quantity of a menstruum, has within a short time been happily applied in pharmacy. This process is founded on the fact, that a fluid impregnated with the soluble portions of a powder with which it is in contact, can be driven off by the addition of another fluid, or an additional quantity of the same fluid. Lixiviation, claying of sugars, &c. are well known applications of this fact, which was first announced by Vauquelin, who by alternately passing fresh and salt water through sand, verified that one fluid could be displaced by another.

At a more recent period, M. M. Robiquet and Boutron introduced this process into organic chemistry, and remarked that on adding ether to powder of bitter almonds to obtain the fixed oil, the ether acted like a piston, and drove off the oil without mixing with it. But we are indebted to M. M. Boullay for a more extended application of this method, and

for their having caused greater attention to be paid to it by pharmaceutists.

M. Guillermond says, that all his experiments on the subject were performed under the supervision of M. Soubeiran. He divides them into two classes; 1, treatments with water; 2, with alcohol.

In each of these series I followed, says he, three different modes of operating. 1. Maceration, or the method of M. Cadet, that is, moistening the powder with double its weight of water, subjecting it to the press after a maceration of 12 hours, and replacing the expressed fluid by a fresh quantity, equal to the original weight of the powder:

2d. Continued displacement:

3d. Maceration and displacement, that is, subjecting the powder to displacement after a previous maceration.

The two first operations were conducted simultaneously, and the results compared, that any differences that existed, might be at once perceived.

The third was performed alone, except with a few substances, in which case the results were compared with those of the two first.

After having finished the experiments with alcohol, I was naturally led to examine if the displacement had taken place in as regular a manner as had been announced by M. M. Boullay.

It need scarcely be observed that in all these experiments, the greatest care was taken to prevent contravening accidents or mistakes. In all cases I used distilled water; each substance was coarsely powdered, passed through a seive, and the fine powder which resulted, divided into equal portions according to the number of experiments to be performed. I employed glass funnels, in which the powder was retained at a certain height, by means of a little straw and a layer of cotton; the surface was covered with filtering paper, pierced with holes. Finally, the continued displacement was performed as exactly as possible, and in all cases, I divided the liquors as I collected them, and evaporated them on a stove.

FIRST SERIES. *Treatment with water.*

RATANHY.—

Maceration.		*Displacement.*		
Powder, 185 grammes.		1. treat.	100	gave 8 of extract.
Water, 370 "		2 "	100	8
After having been pressed,		3 "	100	5
the powder retained 100		4 "	100	2
grammes of water, and af-		5 "	100	2
forded 270 of result.		6 "	100	3
1. treat. 270	gave 13 gr. ext'ct.	7 "	100	2
2 " 270	8	8 "	100	1
3 " 270	4	9 "	400	4
810	25		1200	35

The method by displacement was most advantageous as regarded the product, since it gave 35 of extract against 25. It was equally advantageous with respect to the quantity of water employed. By maceration it required 270 grammes to obtain 15 of extract, whereas by displacement 16 were obtained with 200 grammes. Moreover, to obtain 15 grammes of extract, I employed 810 grammes of water in the process by maceration, whilst I had an equal result with 500 grammes of water by displacement. It was likewise observable that the liquors obtained by maceration were of a dull red, whilst on the contrary those by displacement were of a brilliant tint.

This operation, repeated on a fresh quantity of the same root, gave an analogous result.

LIQUORICE ROOT.—

Maceration.		*Displacement.*		
Powder, 330 grm.		1.	100	11 extract.
Water, 660		2	"	13
The powder retained 140 of		3	"	13
water.		4	"	14
1. treat. 520 grm.	gave 38 ex-	5	"	14
tract.		6	"	9
2 520 "	18	7	"	9
3 520 "	3	8	"	5
		9	"	3
1560	59	10	"	3
		11	"	3
		12	"	1
		1200		98

The displacement most advantageous: with 500 grammes of water I obtained 61 of extract; by maceration 520 grammes gave only 38 grammes of extract; 1200 of water by displacement gave 98 of extract, whereas 1560 by maceration afforded only 59. The water at first filtered through the liquorice powder very rapidly; when this became somewhat swelled, the operation went on very advantageously. It only required four hours to exhaust the powder in the most complete manner, whilst it took two days to exhaust it by maceration.

Senna.—After having pulverized the senna, aud subjected it to the action of a seive, it was treated by displacement. At first the powder permitted the fluid to run through very rapidly, and the first result was very little charged with soluble principles; the senna, however, soon swelled greatly and developed a viscous matter; so that after affording 200 grammes of a highly charged fluid, the operation completely ceased.

I took another portion of senna, and contented myself with coarsely powdering it. On pouring water over it, it ran through with great rapidity during the whole operation; the viscous matter had not time to become developed, and the substance was exhausted in less than two hours, but it required a great quantity of water.

Maceration.		*Displacement.*		
Powder, 170 grammes.		1.	100	gave 3 extract.
Water, 340 "		2	100	3
The powder retained 2-3 of the water.		3	400	13
		4	400	11
1. 112	gave 8 extract.	5	200	3
2 188	13			
3 225	7		1200	33
525	28			

The displacement is in this case superior only in the quantity of the product.

Gentian.—The process by displacement was not advantageous with this root. The fluid passed through, but so

slowly, that in four days I obtained only 20 grammes of extract from 700 of fluid. In the last treatments the fluid flowed through with greater rapidity, from a cause observed by M. Robiquet; the mass having contracted, several fissures were formed, through which the liquid passed with such rapidity as to become but little charged, so that 108 grammes of water gave only 2 of extract.

With 300 grammes of powder, macerated in 1425 of water, I obtained 82 grammes of extract.

Let us now see the result of the third mode of operating by macerating the powder before submitting it to the process of displacement.

Liquorice.—Powder, 330 grammes, macerated for twenty-four hours in a kilogramme of water, then placed in a funnel; this permitted 400 grammes to escape, and the subsequent results were:

1.	treat.	400	grams. gave	21 extract.
2.	"	100		9
3.	"	100		9
4.	"	100		8
5.	"	100		8
6.	"	100		7
7.	"	100		6
8.	"	100		4
9.	"	100		3
10.	"	100		2
11.	"	100		2
		1400		79

The quantity of extract is less considerable than by continued displacement, but it is greater than by maceration alone, as I obtained 97 by displacement, 79 by maceration and displacement, and 59 by maceration. It is to be noted that the quantities of water employed in the formation of these extracts, were about in the same proportion, 1200 by displacement, 1400 by displacement and maceration, and 2120 by maceration.

I also treated sarsaparilla; but as I obtained results which differed greatly, I shall speak of them separately.

SARSAPARILLA. No. 1.—

Maceration.

Powder, 120 grammes.
Water, 240 "
The powder retained 60 water.

1. treat.	180	gave 14 extract.
2. "	180	4
3. "	180	2
	540	20

Displacement.

1. treat.	100	gave 4 extract.
2. "	100	4
3. "	100	3
4. "	100	3
5. "	100	2
6. "	100	1
	600	17

Maceration and Displacement.

The powder absorbed 600 grammes of water, of which it permitted 233 to escape.

1. treat.	233	gave 10 extract.
2. "	100	4
3. "	100	2
4. "	100	2
5. "	100	1
	633	19

By displacement.	*Maceration and displacement.*	*Maceration.*
Extract, 17.	Extract, 19	Extract, 20
Water, 600.	Water, 633	Water, 540

SARSAPARILLA. No. 2.—

In this experiment, I made use of the apparatus of M. M. Boullay; as the liquid ran through with great rapidity, I was obliged to employ a large quantity of it.

Maceration.

Powder, 300 grammes.
Water, 600 "
The powder retained 200 water.

1. treat.	400	gave 35 extract.
2. "	400	16
3. "	400	7
	1200	58

Displacement.

1. treat.	250	gave 6 extract.
2. "	300	6
3. "	300	6
4. "	300	9
5. "	300	6
6. "	300	6
7. "	300	6
8. "	900	9
		54

Maceration and Displacement.

1.	treat.	430	gave 17 extract.
2.	"	400	15
3.	"	300	10
4.	"	300	8
5.	"	100	2
		1530	52

By displacement.	*Maceration and displacement.*	*Maceration.*
Extract, 54.	Extract, 52.	Extract, 58
Water, 2950.	Water, 1530.	Water, 1200

SARSAPARILLA. No. 3.—

Maceration.	*Maceration and Displacement.*	*Displacement.*
Extract, 29	Extract, 31	Extract, 33
Water, 900	Water, 1022	Water, 1601

The liquors obtained by maceration were filtered, which might have occasioned some loss.

SECOND SERIES. TREATMENT WITH ALCOHOL.

DIGITALIS.—

Maceration.

Powder, 250 grammes.
Alcohol, 500
Powder retained 100 grammes of alcohol.

1.	treat.	400	gave 48 extract.
2.		400	20
3.		400	10
		1200	78

Displacement.

1.	treat.	200	gave 30 extract.
2.	"	200	20
3.	"	200	12
4.	"	200	4
5.	"	200	4
6.	"	200	4
7.	"	200	3
		1400	77

Maceration and Displacement.

1.	treat.	350	gave 28 extract.
2.		350	24
3.		300	12
4.		300	12
5.		300	4
		1600	80

Maceration.	*Maacertion and Displacement.*	*Displacement.*
Extract, 78	Extract, 80	Extract, 77
Alcohol, 1200	Alcohol, 1700	Alcohol, 1400

LIQUORICE ROOT.—

Maceration.		*Displacement.*	
Powder, 140 grammes.		1. treat. 200	gave 24 extract.
Alcohol, 280		2. 200	8
Powder retained 50 grammes.		3. 200	5
1. treat. 240	gave 25 extract.	—	—
2. 240	10	600	37
3. 240	2		
—	—		
720	37		

Maceration and Displacement.

1. treat. 180 gave 13 extract.
2. " 300 22.5
3. " 200 3

680	38.5

Maceration.	*Maceration and Displacement.*	*Displacement.*
Extract, 37	Extract, 38.5	Extract, 37
Alcohol, 720	Alcohol, 680	Alcohol, 600

RATANHY.—

Maceration and Displacement.	*Displacement.*
Powder, 130 grammes.	Powder, 130 grammes.
Extract obtained, 58	Extract, 59
Alcohol employed, 1150	Alcohol, 1950

CONIUM—

Maceration and Displacement.	*Displacement.*
Powder, 500 grammes.	500
Extract, 66	83
Alcohol, 2650	2700

In this case displacement offers a great advantage, hence in the treatment of conium, a previous maceration is attended with loss.

From the above it is evident that whenever this process can be used, the advantage will be incontestable, from the quality

of the products, the economy in the menstruum, and the simplicity of the operation. With the exception of a single substance, in all cases when I used water, I obtained a larger quantity of extract by displacement than by maceration. But this result cannot be generalized; that obtained with sarsaparilla leads to the supposition that other substances may be in the predicament. Different results were afforded when alcohol was used; hemlock alone furnished a larger proportion of extract by displacement, than after a previous maceration, whilst in all the other cases, equal quantities were obtained, showing that previous maceration is useless.

It results from these experiments:—

1. That this process is generally advantageous with substances containing but little mucilaginous matter, and not liable to swell when they imbibe water.

2. That it is also preferable in a treatment with alcohol, first, because organic substances are acted on by this menstruum better than by water; and also because by this process there is less waste of the alcohol.

3. Finally, that a previous maceration is useless, as has been shown by M. M. Boullay.

Another deduction to be made from these details, is, that the process of displacement is not indifferently applicable to all substances: with certain articles it is very tedious and with others almost impossible. It fails with those substances which swell on imbibing water, and the number of these is very considerable.

It must also be observed that the good results obtained in operating upon small quantities, may not be found when large masses are acted upon. In general, the operation depends for its success on the fineness of the powder and the manner in which this is placed in the funnel.

If it is too tightly compressed, the passage of the fluid will be very slow, and during summer fermentation may ensue. If it be too loose, the liquid will pass through too rapidly. Much depends on the fineness of the powder, as one degree is better with one substance, but will not succeed with another.

The next subject of M. Guilliermond's experiments was whether one portion of fluid would exactly displace another. On this head he says.

I took thirty grammes of soft extract of Rumex, dissolved it in two hundred and fifty grammes of water, after which I mixed it with an inert powder, and subjected it to displacement; it required six hundred grammes of water to do this, and even then the whole of the extract was not recovered.

I introduced an inert powder in an apparatus for displacement, and saturated it with alcohol. A layer of water was poured over it with the greatest care, according to M. M. Boullay, this would exactly displace the alcohol, let us see:

The powder weighed six hundred grammes, it absorbed thirteen hundred of alcohol. I displaced this water and divided the products in proof glasses each holding two hundred grammes. The alcohol I employed marked 81½ by the areometer of Gay Lussac.

The first glass contained alcohol at				81½
"	second	"	"	" 81½
"	third	"	"	" 81
"	fourth	"	"	" 80
"	fifth	"	"	" 72
"	sixth	"	"	" 53
"	seventh	"	"	" 40

I therefore obtained but 400 grammes of the original strength. I made another experiment with wine, with the following results:—

I took an inert powder and saturated it with wine, it imbibed 700 grammes. The first portions of the wine that passed through appeared to have undergone some modification, but I continued to add more till this action ceased, and the wine passed through unaltered, when this was accomplished, I poured in water to displace the wine. I at first collected a quantity of liquid equal to that absorbed by the powder, but was much lighter coloured than the wine. I next collected 300 grammes which was less coloured, and so on till complete exhaustion. This experiment demonstrated that the

two fluids became mingled. By this series of experiments M. Guilliermond concludes that the process of displacement may be advantageously employed in the preparation of extracts whenever the vehicle employed is only intended as a solvent and has nothing to do with the medical qualities of the article. But if the displaced fluid is intended to form a tincture, any attempt to operate its displacement by water will give rise to error, and therefore an analogous fluid should be employed.

Jour. de Phar.

ART. LXIII.—ON SPONGE.—By A. Baudrimont.

Sponge is a marine production, classed by zoologists, in the animal kingdom. That in common use is formed of an immense number of extremely delicate fibres, which are crossed and interlaced in a variety of directions, and thus form fibres of different shapes, which are perforated by an infinity of small holes in every part. Whilst alive they are covered with a viscous and tenacious slime. They are attached to rocks and the most part of those found in commerce are obtained in the Mediterranean. Several varieties are to be met with in the market, the principal are:

Fine Syrian Sponge.—This sponge is usually in the form of a conical shallow cup, with sometimes sharp and at others, rounded edges; it appears to be covered with a multitude of harsh, short hairs. Its external surface is convex, and is pierced with very fine holes, but its internal surface has large openings in many parts of its superficies. When first taken from the sea it is almost white, but after having been washed and prepared it becomes of a yellow fawn colour; it sometimes occurs in very large pieces and may be bleached with great ease. It comes packed in hair bags of different weights.

Fine Archipelago Sponge.—This is closely allied to the pre-

ceding, but has a coarser texture, and has a narrower base. It is received in bales covered with hair-cloth, and weighing from two hundred to two hundred and fifty pounds.

Fine, hard Grecian Sponge.—This is harder than the preceding, is less concave, and presents small, close set, regular openings on its sides. Its upper part is pierced with large holes which however do not traverse entirely. It becomes lighter coloured during the processes used in preparing it for sale. It also comes in bales packed in hair-cloth.

White Syrian Sponge.—This sponge is dense, compact, of a light colour, rather darker towards its lower part. It presents several openings covered with stiff and prickly hairs. These openings are deep and terminated towards the lower end of the sponge by coarse and open fibres. It becomes lighter coloured and less compact by preparation. It comes in bales of 150 to 200 lbs., covered with hair-cloth.

White Archipelago Sponge.—This sponge is of a compact texture and presents openings which either perforate it entirely or in part only. It contains much sand, which considerably increases its weight. After being properly prepared it becomes of a light fawn colour, rather darker than that of the preceding variety. It comes in bales of 150 to 250 lbs.

(*Geline*) *Sponge.*—This variety is cylindrical, straight, pierced with several large holes at the upper part, the principal of which pass through its substance. The edges of these openings are garnished with hairs. Its texture is fine, its colour is a dark fawn, becoming reddish near the root. It comes strung on ropes and packed in bales.

Brown Barbary or Marseilles Sponge.—This is in long, elliptical, hard, dense pieces of a coarse texture covered with a blackish viscous mud. It is of a dark and dull fawn colour, and becomes pyri-form on being washed. It is received in bales containing twenty strings, each weighing from twelve to fifteen pounds.

Salonica Sponge.—This is of a circular form, very much flattened, its tissue is tolerably close, but not very elastic; it is pierced with a multitude of small holes which do not traverse

its substance. Towards its root which is about half the size of the body of the sponge, the fibres are solid and of a dark red. It comes in strings packed in bales of different weights.

Bahama Sponge.—This is found of two different forms; first, in a rounded mass, surmounted by long mammillary projections, giving it the appearance of a cow's udder; second, that of a rounded mass, terminated by two curved surfaces which cross each other forming an angle in the middle of the sponge. The root is larger and of a dark red colour. This sponge has a smooth surface, its tissue is fine, but it wants tenacity.

Sponges contain many extraneous substances, as fragments of stone, sand, broken madrepores and shells. Their fibres are also covered with a layer of animal matter of different degrees of consistence of colour, from all of which they must be freed before they are fit for use.

To disembarras them from the sand, clay and animal coating, they are beaten and washed in large quantities of water, but to get rid of the other substance, they must be picked out by the hand if they are not soluble in weak hydrochloric acid. Where those bodies are calcareous, they can be cleaned by placing them in earthen vessels and adding very diluted hydrochloric acid, after the impurities have disappeared the sponge must be well washed and then dried.

Recently sulphurous acid has been employed instead of chlorine, for the purpose of bleaching them, this method has been very successful. It is used only for the finer kinds, and does not injure their texture as much as the chlorine.

Dict. de l' Industrie Manufacturiere, &c.

ART. LXIV—CHEMICAL AND PHYSICAL PROPERTIES OF SPONGY PLATINA. By J. W. Dobereiner.

Platina obtained by the wet process, which I term ethiops of platina, on account of its black color, is distinguished as is well known, by its property of transforming alcohol into acetic acid, in atmospheric air or in oxygen.

I for a long time considered this property as arising from a dynamic power, peculiar to platina, that is, an action produced by mere contact; but ulterior researches, on the manner in which this preparation acts with other oxydizable substances, have changed my opinion in a great degree. In fact, many of these afforded phenomena, which not only indicated, but positively demonstrated, that the ethiops of platina was able to act as an oxidizing body alone, that is, without the contact of air; that when its action is exhausted, and it is exposed to the air, it deprives this latter of its oxygen, and that, in oxidation or acetification of alcohol, it acts in a precisely analogous manner to nitrous gas in the formation of sulphuric acid.

If ethiops of platina be moistened with formic acid, a hissing and a slight detonation ensue, whilst the temperature of the mass is so greatly increased, that it soon appears dry. If to this an additional quantity of the acid be added, the same phenomena are again induced.

If the ethiops be placed in contact with formic acid in a graduated glass tube filled with mercury, at the moment they touch each other there will be an extrication of a considerable quantity of an elastic fluid, which will be found to be carbonic acid mixed with 5 to 7 per cent. of azote.

A comparative examination of this ethiops prepared in different ways, proved, that equal quantities of each, when placed in contact with formic acid, gave rise to very different proportions of carbonic acid.

10 grains platina precipitated by zinc gave 0.42 cubic inches.
10 " " " sugar 0.75
10 by the method of E. Davy.* 1.10

But, as the carbonic acid can only be the result of a greater oxygenation of the formic acid, the condition necessary to this oxygenation—the oxygen, must have been contained in the ethiops, hence this latter must be considered as an *oxyphorus.*

If the ethiops in this disoxygenated state be again moistened with the acid and placed in oxygen gas, carbonic acid is produced, but more slowly; and this production lasts, till all the formic acid is decomposed. The platina becomes charged with so much oxygen, that after drying it has its primary oxygenating properties. These facts prove that platina reduced by the humid process is an *oxyrrphoron*, that is an absorber of oxygen.

Platina disoxygenized by formic acid has no action on hydrogen gas, but in this opposite state absorbs this gas so rapidly, that it often becomes red hot. If this latter effect is not wished, and it is desired to ascertain the exact quantity of gas absorbed, the platina must be moistened with water. It will then be found, that it absorbs a volume of hydrogen, almost exactly corresponding to that of the carbonic acid, it had disengaged from the formic acid.

10 grs. platina precipitated by zinc absorb about 0.42 cubic in.
10 " " " sugar 0.75
10 prepared by process, E. Davy 1.10

It results from these facts, and from the action of platina on formic acid, that—

10 grs precipitated by zinc contain 0.210 cubic inches oxygen.
10 " " sugar 0.375
10 process of E. Davy 0.550

Or that if we assume, according to M. Liebig, the specific

* By treating the deuto-sulphate of platina with diluted alcohol.

gravity of platina, to = 16, a cubic inch will weigh 4608 grains, then—

1 cubic inch platina precipitated by zinc contains 96.768 cubic inches oxygen.

1 cubic inch platina precipitated by sugar contains 172.800 cubic inches oxygen.

1 cubic inch platina, process E. Davy 253.440

When we find the 253 cubic inches of oxygen condensed in a cubic inch of platina occupy only a space of 0,25 of a cubic inch, it is evident that this platina exercises a condensing power on it equal to a pressure of rather more than 1000 atmospheres.

The ethiops of platina obtained by treating the deutoxide of platina, or the combination of this deutoxide with soda, by diluted formic acid, reacts in so energetic a manner on alcohol, that this becomes ignited at the moment of contact; its inflaming powers are therefore superior to those of the platina of Davy; but it does not contain as much oxygen as this latter, for ten grains placed in contact with formic acid, afforded only 0.80 cubic inches of carbonic acid. The inflaming power with which the ethiops of platina is so eminently endowed, does not therefore solely depend on the proportion of oxygen it may contain, but has some connection with the particular form of the molecules of the platina; those of the first are not pulverulent and amorphous, but in a state of extremely fine laminæ.

If the ethiops treated with hydrogen be placed in contact with atmospheric air, it again absorbs oxygen, if during its action on the hydrogen it has undergone no change in the aggregation of its molecules, and the quantity thus absorbed will be nearly that as shown by the above calculation, it is capable of absorbing and condensing.

When the ethiops prepared by any of the above-mentioned processes is digested in tolerably concentrated hydrochloric acid, this soon assumes a yellow brown colour, and the molecules of platina unite in a mass which however has but little cohesion. When both are examined, the first will be found

to contain bi-chloride of platina in solution, and the second to be mixed with the chloride of the same metal. If the ethiops be moistened with formic acid before treating it with hydrochloric acid, neither of the chlorides are formed. It therefore, is evident, that it is the condensed oxygen that decomposes the hydrochloric acid, and disengages the chlorine, which the moment it is extricated, combines with the platina. The chloride becomes so mixed with the platina that this latter ceases to absorb oxygen. If it be treated with potash, the chloride is decomposed, and the absorbing and condensing properties of the metal are restored to it.

Oxalic acid dissolved in water, is also transformed into carbonic acid by the ethiops of platina, but with less rapidity than formic acid; and even oxalates and formiates dissolved in water deprive it of its oxygen, and are transformed into carbonates. This reaction is certainly very remarkable, and serves to prove that the oxygen in the ethiops is not chemically combined with it, but only condensed in a mechanical manner; for none of the oxides of platina act like oxydizing bodies on these salts. This fact, and the circumstance that platina disoxygenized by formic acid, hydrogen or alcohol, rapidly absorbs oxygen from the air, and condenses it to such a degree that it can chemically combine with certain organic substances, explain the continued oxydizing faculty of platina, in the apparatus for the formation of acetic acid, described by me, as well as the development of heat during the exercise of this faculty.

The other properties of the ethiops of platina, as those of oxydizing and inflaming spirit of wood, of condensing olefiant gas into acetic acid, of transforming sulphurous into sulphuric acid, &c. are all founded on this mechanical action of platina on oxygen.

I have never been able to succeed in obtaining an ethiops of platina entirely exempt from carbon, for all platina reduced by the humid process, even that precipitated by zinc, gives out on exposure to a red heat, either pure carbonic acid or a mixture of carbonic acid and oxygen. Sixty grains of this

platina, treated with nitric acid, caustic potash, &c. which according to its action on formic acid must have contained 1.26 cubic inches oxygen, gave 1.20 cubic inches of carbonic acid and a quantity of water. The carbon arises from the zinc, and has no influence on the oxyphoric properties of the platina. It may be remarked, that platina precipitated by zinc is better fitted for the acetification of alcohol, than that obtained by means of organic substances, as it has more density.—*Journ. de Pharm.*

ART. LXV.—REMARKS ON THE TREES PRODUCING CINCHONAS.

By Auguste Delondre.

Notwithstanding the important researches made to ascertain the botanical species or varieties to which the various barks introduced in commerce belong, there still exists a great confusion not only in the particulars of this interesting part of the history of drugs, but even in the fundamental facts relating to them. Thus the latest and most valuable works upon materia medica, refer the Calisaya bark, the one to *Cinchona lancifolia*, the other to *C. nitida*, &c. &c.

Impressed by these discrepancies, and with a view to throw some light upon a subject still so obscure, I present to the Pharmaceutical Society several samples of cinchonas, and sundry particulars which I have been enabled to obtain through the agency of those whom I have employed for several years in the various regions whence this drug is afforded, in collecting cinchonas for my own account.

The Calisaya bark which is now the only species that has acquired much importance in commerce, for its advantageous employment in the manufacture of sulphate of quinine, is collected in the vicinity of La Paz, a town situated at the south-east extremity of Peru, on the boundaries of Brazil, and the immense regions of La Plata.

The collecting of cinchonas was at first limited to a small district, but the great consumption of this precious bark, that has lately taken place, has compelled those employed in that trade to extend their researches to wider regions, principally in the direction of *Carnata* and *Apollobamba.*

The trees that afford Calisaya bark form thickets or clusters on the declivities of hills. The collecting of bark is performed by the neighbouring Indians, who are distributed in small tribes, and who, for a small compensation, penetrate among a thousand perils into the depths of the forest, fell the trees, separate the barks and transport them on their back to the neighbouring streams of Chulumanol, Santa Rosa and Tarbeni, whence they are directed towards the harbour of Islay, and thence to Europe.

The bark is dried in the sun; when of considerable thickness it is loaded with stones in order to prevent its curling, and in this state constitutes the fine pieces of flat bark that are occasionally found in the seroons. The trees that have been felled are apt to emit shoots from the roots; but a long time is required before they are capable of affording good barks. This circumstance, together with the natural obstacles, and the remoteness of the localities which daily increases, corroborates the apprehension already entertained, that a considerable rise in the price of this precious article will ultimately take place.

The three samples, furnished with leaves, flowers and fruit, which I have the honor of submitting to your examination, belong to very different trees, although the barks afforded by them are all introduced in commerce under the common appellation of *Calisaya bark.* This circumstance accounts in some measure for the confusion existing among different authors respecting the tree that affords the bark. No. 1, is produced by the tree called by the Indians *Cascarilla yana yana*, and by the Spaniards *Morena*, which means deep or brown yellow.

This tree resembles our common poplar, as to thickness and height, but is furnished with leaves only at the top. These

leaves are of a velvet green above, and of a purplish colour beneath. It affords the fine bark known by the name of *Tabla*, our flat bark, and grows most commonly in fertile soils, on the hills of *Tipuani*, 120 leagues from La Paz.

Our colleague, Mr. Guibourt, who has devoted a particular attention to the study of pharmaceutic drugs, accepted the charge of ascertaining the botanical species to which the sample belongs. From a careful investigation, and the comparison he has made with the specimens existing in the herbarium of Ventenat, he has come to the conclusion that this sample belongs to the *Cinchona micrantha.*

Specimen No. 2, yields the species called by the natives *Blanca* or *Amarilaza*—pale yellow. The tree that affords it resembles our apple tree. Its greatest height is from twelve to fourteen feet; its branches are circular, extending to a considerable distance so as to form a large head. Its leaves are nearly as long, but considerably narrower than the preceding species. The size of the fruit is also very different. This species is collected especially in the vicinity of *Apollobamba*, in the ravines of Peluchoaco.

No. 3, is called *Amarilla*, or yellow bark. This species grows on barren mountains, in rocky soils. Its bark is thinner, and its leaves smaller, than the preceding species.

The specimen No. 4, appertains to No. 1, and is furnished with a certain quantity of fruit. I have vainly endeavoured to cause them to germinate, although they appear to have attained a degree of perfect maturity; but we know that coffee and several other plants of the same family easily lose, and in a very short time, their germinating power. I wish, however, that some of our colleagues would be pleased to repeat my experiments. They may be more fortunate than myself, and their success is so much more desirable, that the genus cinchona has no living representative in any of the botanical gardens of Europe, although it is probable that it might easily be cultivated. With a view to fill this vacancy, I caused fifty young plants of cinchona to be sent to me from the

interior, but I have to regret that every one of them died before reaching the coast.

The other samples consist of bark of the root of species No. 1, and an extract obtained by incision from the tree, and evaporated in the air. Mr. Henry, Jr. and myself, having submitted to analysis these different products, we have ascertained:—

1st. That the leaves and seeds of the Calisaya bark do not contain the vegetable alkalies found in the bark.

2d. That the root contains them as well as the red and yellow colouring matter.

3d. That the inspissated juices obtained by incision are composed of the same principles as the aqueous extracts of the bark of the tree.*—*From the Journ. de Pharmacie, Oct.* 1835.

ART. LXVI.—ON BERBERINE.—By MM. Buchner, Senior and Junior. (Extract.)

Preparation. The root of the *B. vulgaris* is to be contused and a sufficient quantity of boiling water poured on it, it is suffered to digest for some hours, being frequently stirred; the fluid is then decanted and the operation repeated. The residue is subjected to pressure, and the whole of the decoctions filtered and evaporated to the consistence of a soft extract. This is several times treated with boiling alcohol 0.8200 and the tinctures decanted from the residue, they are then to be filtered and distilled, so as to obtain most of the alcohol, the residue is placed in a flat capsule in a cool place. In twenty-four hours, it will be found filled with small plumose crystals of a yellow colour, these are to be separated as much as possible

* The whole proceeding of the experiments made by Messrs. A. Delondre and Henry, jr. are given at full length in the Journal de Pharmacie; but, for want of time, I have contented myself with giving their conclusions. E. D.

from the brown and unctuous mass surrounding them, by expression in a fine linen cloth and washing with cold water.

There are crystals of impure berberine. This substance being but slightly soluble in water and alcohol when cold, and on the contrary very soluble in these fluids with the aid of heat, renders it easy to purify them. For this purpose the impure crystals are to be dissolved in boiling water, which as it cools permits the berberine to precipitate in a crystalline form, whilst the extractive remains in solution. If this precipitate be treated a couple of times with boiling alcohol and the hot solution be filtered, the berberine will be obtained in pure state, and needs only to be washed with cold alcohol and dried by a gentle heat.

By this process MM. Buchner obtained ℥i. ʒi. of berberine from 4½ pounds of the bark of the fresh root.—Thence 1.3 of berberine corresponds to 100 parts of the bark.

Physical and Chemical Properties of Berberine.—In its pure state, it is a very light powder, composed of acicular crystals of a bright yellow colour. It has a highly bitter taste which is very permanent; it is inodorous. It has no action on turmeric, but changes litmus to a green colour.

It is very slightly soluble in cold water, but its colour is so intense that a very minute portion is sufficient to give a decided yellow tint to this fluid. The colour of a diluted solution is clear yellow, of a concentrated solution, brownish yellow. Five hundred parts of cold water dissolve only one of berberine at 55° F. It is also but little soluble in cold alcohol, 250 parts of this taking up but one of berberine. It however, dissolves in almost all proportions in boiling alcohol or water, but the greatest part precipitates on the cooling of these menstrua. It is but slightly soluble in the fat oils, in those of turpentine or lavender; insoluble in either, carburet of sulphur and petroleum. Alkalies change its colour to a brown; acids and other bodies having a great affinity for water, precipitate it from its aqueous solution. Concentrated sulphuric acid changes it into ulmine, and concentrated nitric acid into oxalic acid; most of the metallic salts precipitate it of different

colours. It is readily decomposed by heat. At a temperature a little more elevated than that of boiling water, it becomes reddish, but regains its original colour on cooling. Heated in a retort over an oil bath, it gives out water at 212 F., becomes brown at 266°, melts at 320° to 340°; a yellowish fluid passing over; finally at 425°, it swells and leaves as residue, a voluminous charcoal of a metallic brilliancy.

Composition.—Berberine subjected to combustion with oxide of copper in the apparatus of Liebig, to determine the proportions of carbon and hydrogen; and then in an apparatus filled with carbonic acid to ascertain the quantity of nitrogen, gave the following mean of several experiments:

Carbon	61.23
Hydrogen	5.49
Nitrogen	4.03
Oxygen	29.25

Its formula is therefore 33 C + 36 H + 2 Az + 12 O, and its atomic number 4124.

Medical Properties.—Berbery root has been much employed in different cachexias, and especially in jaundice and other hepatic affections; in large doses acting as a purgative. The authors of the present memoir have found that berberine in doses of 1 to 10 grains is an efficacious tonic or purgative, and may be successfully employed in all cases in which the root is indicated.

Jour. de Phar.

ART. LXVII.—NEW PRINCIPLES IN OPIUM.—By M. Pelletier.

The author in this memoir gives the history of two new substances discovered by him in opium, by treating this article with lime and ammonia.

Paramorphine.—This substance is white, scarcely soluble in water, very soluble in alcohol and ether, even when cold; of an acrid and styptic taste. By spontaneous evaporation, it crystallizes in needles. Weak acids dissolve it; alkalies precipitate it from its solution; an excess of alkali does not redissolve it, except when the alkaline solutions are highly concentrated; its acid solutions never afford crystals, on evaporation they only give yellowish scales. It melts at 300 F., is not volatilized at a higher temperature, but like the vegetable alkalies is decomposed giving azotised products. It differs from morphine in not reddening concentrated nitric acid, in not forming crystalline salts with the acids, and in not striking a blue colour with the salts of iron. It resembles iodine in its solubility in alcohol and ether, and by its alkalinity, but differs in never crystallizing in well defined forms, and being always precipitated from its acid solutions by ammonia. It has no analogy with narceine or meconine. The only substance with which it has much analogy is narcotine, though the differences of taste, fusibility, and solubility in alcohol are sufficient to distinguish them.

Pseudo-morphine.—It is almost soluble in water, still more so in pure alcohol and ether. Alcohol at 36° B., dissolves rather more; water of ammonia has scarcely any action in it; solutions of potash or soda dissolve it freely; in saturating these alkalies by an acid, it is precipitated. Concentrated sulphuric acid blackens and alters it. Concentrated nitric acid acts on it, as on morphine, giving it an intense red colour and finally changing it into oxalic acid. The most singular property of this substance is that of striking an intense blue colour with the per-salts of iron, and particularly with the hy-

drochlorate of the peroxide, this colour disappears on the addition of an excess of acid. The affinity of this substance for oxide of iron is so great, that whilst it resists the solvent power of sulphuric acid, and is scarcely affected by hydrochloric; the hydrochlorate of the peroxide of iron has a marked influence on it; the solution is of a beautiful blue; when heated it becomes of a dirty green; on the addition of ammonia, a slight precipitate occurs, and the solution assumes the colour of Alicant wine.

When subjected to the action of heat, pseudo-morphine is not volatilized, it does not even fuse, being decomposed at the moment this process appears to be about to take place. When distilled, it affords a little oil, some slightly acid water, and leaves a voluminous charcoal.

The following is a comparative analysis of these substances with that of morphine, by M. Liebig.

	Para-morphine.	*Pseudo-morphine.*	*Morphine.*
Carbon	72.310	52.72	72.340
Hydrogen	6.290	5.81	6.366
Nitrogen	4.408	4.08	4.995
Oxygen	17.992	37.37	16.299

Jour. de Chim. Med.

ART. LXVIII.—RESEARCHES ON PITAYA BARK, AND DISCOVERY OF A NEW VEGETABLE ALKALI, CALLED PITAYNE.

(From the Italian.)

The court of Rome having received as a present, from the republic of Columbia, a certain quantity of bark, under the name of Pitaya bark, which, in that country, is preferred to in fevers, and brings a higher price than any other bark; Messrs. Folchi and Peretti were invited to examine it separately. To the former was entrusted the care of describing

its external physical characters—to the latter, that of examining it chemically.

Folchi commences the description of the Pitaya bark by a brief historical account of that substance. He relates that professor Brera, in his *desideratum*, calls it *Pitaya china;* that it was brought to Liverpool, in 1817, from Guagaquil, under the name of *Cinchona Peruviana*, was sent from there to Hamburg, and thence to every part of Germany, where it went by the appellation of *Cinchona nuova.* He adds that some pharmacologists have mistaken it for the *Techames* and *Bicolor barks*; but the physico-chemical differences existing between these barks is so great that this supposition is entirely given up. Mr. Batka, of Prague, in an interesting memoir presented to the Royal Academy of Medicine of Paris, states that in England, the name of *Pitaya* is given only to the *Cinchona bicolor*—this also is erroneous. Mr. Guibourt, in the second edition of his history of drugs, has dwelt more than any other author upon the subject of this bark; but Folchi doubts whether the bark mentioned by him, and in which Henry, jr. found both quinine and cinchonine, is the same as the bark under consideration, because the physical characters are altogether different, and it contains none of the vegetable alkalies that are fonnd in the cinchonas.

Among the samples entrusted to Mr. Folchi, the largest pieces were half rolled upon themselves; the thinnest had the edges closely rolled as the common bark. The former were more than a foot long, one inch in diameter, and of one and a half thick. The external surface, formed of the epidermis and the cellular tissue, varied in different pieces; in some and especially in the largest pieces, it was furnished with a white epidermis, partially rubbed off by friction, and resembling the pearly cuticle of the Carthagena bark. In others, the surface was sometimes fungous, tubercular, rough, with slight fissures, and divided in some parts in small scales. The colour was ash-gray, apparently soiled; internally of a fawn colour; the *liber* composed of thin fibres of a fawn orange colour, of a deeper tint towards the internal surface.

The tree which affords the bark now under consideration, grows spontaneously on the Pitaya mountains, in the province of New Grenada. Its genus and species are not well determined. But as Peretti has ascertained that the bark contains neither quinine nor cinchonine; the tree cannot be referred to the genus *Cinchona*, especially, since a great number of plants that had been improperly placed in this genus, have been judiciously separated by Mr. Decandolle, and distributed in the new divisions he has established. Messrs. Brera and Guibourt, think that the pitaya belongs in all probability to the genus *Exostema;* the last author has been influenced in his opinion, by the great resemblance between the words *Pitaya* and *Piton*, the latter of which is commonly given to the *Exostema floribunda*, piton or St. Lucia bark. But Folchi opposes to Guibourt's opinion the following argument, which he thinks has a considerable weight.

It has been remarked that the trees affording bark, present a certain regularity as to natural localities; thus, for instance, it is well known that the *Luculia* and *Hymenodictyon*, are indigenous to the East Indies; that the *Danais* grows in southern Africa; the *Pinckneya*, in Georgia and Florida; the *Remija*, in Brazil, &c. and so it is with the whole geographical distribution. Now the genus *Exostema*, and especially the first section, *Pitonia*, to which all the true *Exostemas* belong, is peculiar to the West India Islands, a country very different from that in which we are certain our pitaya grows naturally. Mr. Folchi is inclined to think that this tree belongs to the genus *Buena*, which is constantly met with, as well as the genus *Cinchona*, on the coast of Peru and New Grenada, with a single exception, however, that of the *Buena hexandra*, which grows in Brazil.

Chemical Investigation.—The first experiments of Mr. Peretti were made with a view to ascertain whether the pitaya bark contained any of the vegetable alkalies of the cinchona; but his experiments were negatived, but whilst he was disappointed in this respect, he had on another hand, the advantage of ascertaining that it contained a peculiar alkaloid.

A second experiment on a larger quantity of the bark, fully confirmed this fact. He boiled six ounces of Pitaya bark in distilled water, and obtained two ounces of extract which he treated by alcohol of 34°. Part of it was dissolved and put aside; the undissolved part presented the characters of a gallate of lime. The alcoholic product was diluted with a little water, and submitted to distillation. The aqueous residuum left in the retort coloured litmus of a red colour; precipitated a solution of gelatin, turned green the solution of sulphate of iron, and possessed an astringent and very bitter taste. These characters indicated already that this residuum contained tannin with an excess of gallic acid, a bitter substance and colouring matter. The solution was, moreover, precipitated by ammonia, and a part of the yellowish white precipitate that was produced, was treated by ether, and afforded by evaporation the tannate of the bitter substance or new vegetable alkali, leaving behind the colouring matter.

The remaining part of the precipitate was treated with boiling water, which dissolved it partially; the solution was slightly acidulated with sulphuric acid, then dissolved with animal black, and the excess of acid saturated by lime, and afterwards evaporated to dryness. The residue well dryed was dissolved in alcohol, in the state of sulphate, and permitted to crystallize. The crystals were acicular, and in the form of a fan.

That of the residue that had not been dissolved by the boiling water, was treated by the hydrate of potassa, which produced a ruby red. The potassa having been saturated by an acid, the colouring matters were precipitated.

From these experiments on related here, Mr. Peretti inferred that the Pitaya bark contains—

1st. A bitter principle, having the characters of an alcaloid.
2d. Two different colouring matters united to gallic acid.
3d. A gallate of lime.
4th. Some gum.
5th. Some resin.
6th. A fibrous part.

Pitayne.—(Pitayna?) The characters of this new vegetable alkali, which may be called *Pitayne*, on account of its source, are principally to possess no sensible bitterness in its pure and solid state; but this character is developed, whenever, being saturated by an acid, it is dissolved in water, alcohol or ether, in which it is very soluble.

Pitayne melts at a temperature above 100° centigrade, emitting very bitter fumes, which condense in very delicate prisms, and afterwards an empyreumatic smell. Warm and concentrated nitric acid decomposes it; but its combination with sulphuric acid, in the proportions of ninety-six parts to four of acid, yields a white, bitter and crystallizable salt, in the shape of divergent prisms, and presenting the figure of a face. With acetic acid, it produces a bitter and crystallizable salt.

Journal de Pharmacie, October, 1835. E. D.

ART. LXVIII. NEW CARBURET OF HYDROGEN.

By MM. Dumas and Peligot.

In our preceding memoir on methylene and spirit of wood, we established the existence of a new alcohol. Two carburets of hydrogen $C^4 H^4$ and $C^8 H^8$ are known, each capable of forming two hydrates and a great number of ethereal combinations. A third is also known $C^{16} H^{16}$ but its compounds have not been examined. To show the regularity of the series formed by that series of isomeric carburets of hydrogen, we announce the discovery of another $C^{64} H^{64}$. Thus we have four carburets of hydrogen identical in composition, but in which the condensation of atoms is as 1, 2, 4, 16 which seems to indicate the existence of intermediate compounds, yet unknown.

We obtained this new carburet of hydrogen in distilling ethal with vitreous or anhydrous phosphoric acid. It is a

colourless, oily liquid, boiling at about 500 F. It may be distilled on potassium. The analysis of this product resembles that of methylene and bi-carburetted hydrogen, but its formula is C^{64} H^{64}.

It evidently results from the preparation of this body and the analysis of ethal, that this latter must be represented by C^{64} H^{64} O^{2}, that is, equal volumes of the new carburet and water. Distilled with phosphoric acid, it loses its water and the carburet becomes free. Ethal is therefore a new alcohol, and as it is produced during the saponification of spermaceti, we shall give the name of *cetene* to the carburetted hydrogen, and ethal will become a bi-hydrate of cetene.

When a mixture of ethal and perchloride of phosphorus is distilled, a liquid, oily product is obtained, boiling at about 600 F. and burning with a green edged flame; this is a chlorhydrate of cetene C^{64} N^{64} Ch^{2} H^{2}. It is a compound of equal volumes of cetene and chlorhydric acid, exactly similar to corresponding compounds of methylene and alcohol. On adding concentrated sulphuric acid to ethal, a sulphocetic acid is formed which is solid. The sulphocetate of potash closely resembles a soap; it crystallises in alcohol. It is formed of C^{64} H^{64} SO^{3} + KO, SO^{3} × K^{2} O. This formula is precisely similar to that of the sulphovinate of potash. Finally, spermaceti is a definite compound of one atom of oleic acid, one atom of margaric acid, three atoms of cetene and three atoms of water.

These facts are sufficient to establish the theory of cetene and its various combinations; they prove that spermaceti is a body analogous to the ethers; and ethal a compound similar to alcohol and spirit of wood. The saponification of spermaceti takes place in an analogous manner, to the decomposition of the compound ethers by potash. The analogy between the fatty bodies and the ethers, already pointed out by MM. Chevreul and Dumas is verified as regards spermaceti. *Journ. de Pharm.*

ART. LIX.—ON THE PREPARATION OF SYRUPS AND MELLITES.

By M. Deschamps.

M. Deschamps has proposed, to prevent the alterations which syrups and mellites undergo, to replace the water by a liquid formed of eighty-four parts water and sixteen of absolute alcohol. By means of a displacement apparatus, he treats the various substances which enter into the composition of syrups with this diluted alcohol, and afterwards dissolves a pound of sugar in every ten ounces of the product.

For the mellites and oxymellites, he advises the use of pure mellite instead of honey which is seldom pure, then to prepare the compounds in the usual way, adding a certain proportion of alcohol to prevent fermentation.

M. Deschamps gives the result of numerous experiments on the subject of displacement; these are as follows:

1. That pressure accelerates the filtration of fluids through powders.

2. That the displacement of one fluid by another does not take place in an exact manner, and a previous maceration is sometimes useful.

He divides powders in several classes as regards displacement; according to the facility with which they permit fluids to saturate and pass through them, to the degree of their absorbing fluids and thus of enlarging, and finally according to the quantity of mucilage they contain, which is sometimes so great as to totally prevent displacement.

In the report on this paper, by MM. Chereau & Beral, they observe that the credit of first proposing the addition of alcohol to syrups to prevent their becoming spoiled, is due to one of themselves; and moreover that it cannot be adopted as a general rule, as the administration of an alcoholic syrup is often contra-indicated; and also that a mixture of alcohol and water is not precisely equivalent to the wine it is intended to replace.

To this we may add, that this alcoholic liquid, recommended instead of water, in the treatment of substances, and intended for the preparation of syrups, acts on those substances in a very different manner from pure water, and furnishes syrups of a different composition, from those made with the juices of plants or their aqueous decoctions.

Journ. de Pharm.

ART. LX.—EXPERIMENTS TO ASCERTAIN THE EXISTENCE OF LEAD IN THE ATMOSPHERE OF A WHITE LEAD MANUFACTORY. By Arthur Dunn.

Having witnessed at my manufactory, the frightful effects of white lead on the workmen employed, I was anxious to determine if it was possible for lead to exist in the atmosphere, and, through that medium, be absorbed into the system by the action of the lungs. For this purpose I made the following experiment, which certainly is important to the manufacturer, as it points out a serious evil to be guarded against. I shall now merely confine myself to the results obtained, and leave to some of your more scientific friends, any theoretical reasoning, or practical hints, the experiment may suggest, provided you consider it worthy to occupy a space in your valuable magazine, and remain, Yours, &c.

Arthur Dunn.

An evaporating dish, containing about twenty-eight pounds of moist carbonate of lead, was placed in a sand bath, and heated to about the same temperature as the drying stove commonly used, never exceeding 150° Fahr.; over this was fixed at the distance of from eight to twelve inches, a pair of common bellows, with a glass tube attached to the pipe, which pipe was introduced into a green glass bottle containing

twelve ounces of distilled water, acidulated with two drachms of nitric acid. The apparatus being thus arranged, the bellows were set in action, by which means the atmosphere, loaded with the moisture from the lead, was made to pass in a continued current through the liquid; this was continued for six hours. The whole was then transferred into a platina dish, and evaporated to perfect dryness. The residue was dissolved in one ounce of distilled water, with two drops of nitric acid, to insure the solution of the lead, should any be present. A current of sulphuretted hydrogen was next passed through the solution, which immediately gave a minute dark precipitate; this being collected on a filter, and washed, was transferred to a watch-glass, and treated in the usual manner with nitric acid to decompose the sulphuret, which gave on the application of hydriodate of potash, the most unequivocal proof of the presence of lead.

Another experiment was conducted at the same time with similar vessels, in the same room, but the current of air was not passed through the liquid. This, on the application of sulphuretted hydrogen, gave not the least indication of lead, but, on evaporating the whole to dryness, and treating the residue, in the manner before described, with hydriodate of potash, the slightest possible trace of the yellow iodide of lead was perceptible. The nitric acid and distilled water were separately tested with great care, but were found perfectly free from lead, so that, no doubt, the trace of lead must have been absorbed from the atmosphere, as the bottle containing it stood beside the one through which the current of air was passed. I ought to have mentioned before, that the temperature of the laboratory during the experiment was from 70° to 80° Fahr., and that the door was kept closely shut, that the air might be loaded as much as possible with the vapour.

Lon. and Ed. Phil. Mag. and Jour. Frank. Institute.

ART. LXI.—REMEDIAL POWERS OF THE CEANOTHUS AMERICANUS. By Dr. D. H. Hubbard.

I do not remember to have seen any reference made, (medicinally,) to the Ceanothus Americanus of Linnæus. Its sensible properties led me to use it in a case of aphthæ, and subsequently in other derangements of mucous surfaces, where I found it of some importance. Professor Bigelow describes the Ceanothus as follows: "Leaves heart ovate, accuminate, triply nerved. Panicles axillary elongated. A small white flowering shrub, not unfrequent in dry sandy soils. Leaves two or three inches long and one broad, finely serrate, and tapering into a long point. From the axils of the upper leaves come out leafless branches bearing crowded bunches of minute white flowers. These are followed by dry three seeded, and somewhat triangular berries. The leaves were used among other substitutes for tea during the American revolution." I might add that the dried leaves and seeds have an odour, when bottled, not unlike imported tea. It has a slight bitter, and somewhat astringent taste. I first used it in a case of an old lady of seventy, who had a severe thrush following typhus. The usual gargles were tried without much effect. Every second or third day a new coat of darker hue would cover the whole interior of the fauces. The mucous membrane after its discharge presented a dark florid appearance, with extreme sensibility. I had tried borax, alum, nitras argenti, vegetable astringents and tonics, as gold thread, crane's bill, hardhack, oak bark, sumach, &c. without much benefit. The Ceanothus growing near, I directed a strong tea to be made of it, which acted like a charm; the thrush soon passed off, and without relapse. Since then I have used it largely in aphteæ of children, and find it highly useful in cases following dysenteria maligna, as well as those of less debility and disease, even after other gargles have been ineffectually tried. During last March and

April, scarlatina, attended in most cases with ulceration of the fauces, was very prevalent with us; I depended almost exclusively upon the Ceanothus, with borax for a gargle, and in all but a single case of very malignant character this gargle was effectual. The form I used, and which I found best adapted for the cases as presented, was prepared by making a strong tea of the Ceanothus and flowers of Anthemis cotula, and to a gill add a piece of borax the size of a large pea. I think the borax and Mayweed rendered it in many cases more effectual. I have also used it with benefit in form of a tea in dysenteria of children, and found it fully equal in many cases to the Spirea tomentosa. The tea I used was prepared from the leaves and seeds.

Boston Med. and Surg. Journ. Sept. 30*th*, 1835.

MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

June 30, 1835.—No quorum being present adjourned to August 25.

September 27, 1835.—Minutes of the Board of Trustees at a special meeting convened to accept the resignation of George B. Wood, M. D. of the chair of Materia Medica and Pharmacy, were read; also the minutes of the last stated meeting of the Board, by which the College is informed that Robert E. Griffith, M. D. was duly elected Professor of Materia Medica and Pharmacy, to fill the vacancy occasioned by the resignation of Dr. Wood.

The Society then went into an election for Trustees, in place of those whose term of service was about to expire, and the tellers reported that the following were duly elected: F. R. Smith, Thos. J. Husband, Jos. Scattergood, Jacob Bigonet, Jos. C. Turnpenny, Peter Lehman, Saml. F. Troth, and Chas. Shaffer, jr.

The resignation of Thomas Milnor was read and accepted.

A communication from J. C. Jenkins, tendering his resignation, was read and referred to the treasurer.

October 24.—The Committee on Patent Medicines were discharged at their own request, and a committee consisting of Jos. Scattergood, Saml. F. Troth, and Algernon S. Roberts appointed, with instructions to report at the next stated meeting of the College.

The resignation of J. C. Jenkins was duly accepted.

The following communication from E. Durand was read:

"I have the pleasure of presenting to the Philadelphia College of Pharmacy part of a collection of specimens of materia medica, lately received from Mr. Guibourt, an eminent Pharmaceutist of Paris. I also transmit a translation of the notes accompanying the specimens.

No. 1. *False Angustura Bark.* The Bark of the *Brucea antidysenterica* is not to be met with in commerce, what was

formerly so called and known as False Angustura is most probably the product of the Strychnos nux vomica.

No. 2. *Balsamum Tacamahaca.* This name has been given to several resinous substances, principally afforded by the genus *Amyris* or *Icica* of S. A. The specimen sent is the only variety found in our commerce. I am of opinion that it does not differ from the Cayenne incense, which is the product of the *Icica gauyanensis* or *heptaphylla*, AUBLET.

No. 3. *Canella Alba.*

No. 4. I cannot procure the bark of the *cinchona ovalifolia*, MUTIS. No specimen of it exists here, except in the cabinet of natural history.

No. 5. *Cinchona lancifolia*, MUTIS. I send the *fibrous Carthagena bark* which in all probability is the product of this species.

No. 6. True Winter Bark. *Drymis Winteri.*

No. 7. The confusion which has existed on the subject of the White Ipecacuanhas, has induced me to transmit specimens of both the *Ionidium Ipecacuanha* and the *Richardsonia Brasiliensis.*

No. 8. Seeds of the *Jatropha Curcas.* This article is scarce and only to be found in a few collections. Those sent are derived from that of Paris School of Pharmacy.

No. 9. Bark of the *Laurus Culilawan.*

No. 10. Gum resin of the *Pastinaca opoponax.*

No. 11. Root of the *Carex arenaria.*

No. 12. Seeds of the *Strychnos ignatia.*

The thanks of the College were ordered to be presented to Mr. Durand for this valuable addition to their cabinet.

Miscellany.

Safflower.—This article is imported from many different places. That from Spain is of a bright and deep colour, is well preserved, but often mixed with remains of dark coloured flowers. It is packed in a variety of modes. That from Egypt is of a dark red, and strong smell, the petals are more fringed than the Spanish. It comes in bales of three hundred and twenty, to three hundred and fifty kilogrammes, lined inside with blue cloth, and covered externally with rushes and strong bagging secured with cords, or in bags well tied with ropes which appear to be formed of some kind of bark. The article contained in this latter kind of package is not of as good quality as the first. That from India is in small, compact, flattened masses, of a faded colour externally, but of a rich rose tint within. It comes packed in gunny bags. This kind sometimes contains sand, and still more frequently yellow flowers which injure its quality.

Dict. de l'Industrie, &c.

Crucibles.—The best crucibles for general use are the Hessian, and those manufactured at Paris, by Mr. Beaufay. The first are composed of three parts of clay (containing 46 silex, 34 alumine, 3 oxide of iron to the quintal,) and one of quartoze sand; the crucibles of Beaufay are one part clay, (52 silex, 27 alumine, 2 oxide of iron,) and two parts of the same earth, baked and calcined. They are lined internally with a thin coating of raw clay. These crucibles will stand a heat of 150 Wedgewood's pyrometer.

Ibid.

Removal of grease spots.—The following composition, invented by Mr. Lenormand, has been found very useful in the removal of spots of grease from woolen clothes. Fuller's earth is to be mixed with a sufficient quantity of water to remove any sand; this will precipitate whilst the clay held in suspension in the fluid can be decanted with it. It is then permitted to settle, the water poured off, and the precipitate dried. To a kilogramme of this, is to be added 250 grammes of carbonate of soda, as much soap, and eight yolks of eggs beaten with 250 grammes of ox gall. The mixture is to be well levigated, and when the whole is perfectly homogenous, formed into balls or cakes and well dried.

Ibid.

Asparagine in extract of Belladonna.—Mr. Biltz, of Erfurt, has discovered the existence of well defined crystals resembling Asparagine in almost

all their properties, in extract of belladonna. As however, they differ somewhat in their action with acids from the true asparagine, it may be necessary to establish several species of the substance, as has been done with sugar, the gums, &c.

Journ. de Pharm.

Crystallized Oxide of Chrome.—M. Wohler has succeeded in crystallizing the oxide of chrome by passing the vapour of perchloride of chrome through a glass tube heated to redness; the oxide is deposited in a crystalline form. Two atoms of the perchloride, or 2 (2 Cr + Cr Cl^6) furnish 3 atoms of oxide of chrome 3 (2 Cr + 30) 12 atoms of chlorine, and 3 atoms of oxygen. This oxide is black, and of a perfect metallic brilliancy. The crystals are of the same form as those of the native per oxide of iron, and are as hard as corundum. *Ibid.*

Alcohol.—Mr. Scanlan has devised a very good method of obtaining by simple distillation a spirit almost free from the oil which usually contaminates it. The pipe of the capital of the still divides into two tubes, each connected with a distinct refrigerator; at their junction is a stop cock, so situated, that by turning it, the communication between the still and either of the worms may be opened or cut off, and the vapour produced, thus directed to one or the other. The oil being much less volatile than the alcohol, does not begin to rise until the liquor in the still becomes considerably reduced in strength. By allowing the alcoholic vapours produced before this point is reached, to enter into one vessel, and then, the stop cock having been turned, receiving the impure spirit subsequently distilled in a separate condenser, he obtains an alcohol as nearly as possible free from its usual impurities.

Kane. Elements of Pharm.

Lead Colic cured by Hydrochloric acid.—Mr. Gendrin communicated to the Academy of Sciences at their sitting in December 1834, some additional observations on the treatment of colica pictotum. He has ascertained that the administration of sulphuric acid does not produce the same relief where the colic has been induced by the deutoxide of lead, as when it has been caused by the carbonate. In white lead manufactories, the use of this acid has always been attended with the happiest prophylactic effects, whilst in those of red lead, it has proved powerless. He then announces that he has found that diluted hydrochloric acid would remove the poisonous effects of the deutoxide as rapidly and certainly as the sulphuric cures those caused by the carbonate.

Journ. Hebdon.

Correctives of Opium.—According to M. Puchelt, a German physician, sulphate of soda is an excellent corrective of the unpleasant effects of opium

given in the proportion of a scruple to half a grain of opium. This dose may be repeated two or three times a day. In combination with Glauber's salt, he says that opium may be administered in cases when it would otherwise be contra-indicated. In obstinate hæmorrhages especially, this mixture will produce the happiest effects. The author also asserts that if this neutral salt prevents the congestion sometimes produced by opium, so castor prevents its narcotic effects, without diminishing its sedative powers. *Lond. Med. & Surg. Journ., & Am. Journ. Med. Sci.*

Ergot caused by an insect.—Mr. Rennie in his alphabet of Medical Botany, states that he has ascertained in numerous instances, in 1832, that the ergot of rye (*Secale cornutum*,) is a morbid enlargement of the grain, caused by the puncture of a four-winged fly, (*Aphis graminis*,) similar to the aphis of the rose, but one half smaller, and darker green with black markings, and not as has generally been supposed, a fungus.

Guthrie's ointment for the cure of Chronic Opthalmia.—

R.	Nit. Argenti,	gr. x.
	Sub. acet. Plumbi.	gtts. xv.
	Axunge.	℥i.

The nitrate of silver and acetate of lead are to be reduced to an impalpable powder, and perfectly incorporated with the axunge. A fragment of this ointment of about the size of a grain of wheat, is to be introduced under the upper eye lid, which is to be gently rubbed with the finger, so as to spread the ointment over the diseased part. The pain is severe and lasts for about an hour.

Devergie's Depurative syrup.—

R.	Lig. Guaiac.	
	Rad. Saponaria	
	Rumex Patient	aa lb. ii.
	Dulcamara	
	Arctium lappa	aa lb. iii.
	Fol. Senna.	℥viii.

Make two decoctions with thirty pints of water each, evaporate and add sugar and honey each thirty pounds, and form syrup.

Journ. de Chim. Med.

Eau medicinale.—Dr. Wilson of Yoxford (England,) first discovered that the celebrated gout nostrum, the Eau medicinale of Husson, was composed of the expressed juice of the flowers of the Colchicum autumnale. The formula given by Dr. Wilson is: Take two parts of the expressed juice of the flowers of meadow saffron, and one part brandy. Mix them, and permit the mixture to stand undisturbed for a few days, to al-

low any impurities to subside, then decant off the clear liquor and keep it in well stopped bottles for use. When too little spirit is added, the mixture is apt to ferment. Neither wine nor the bulbs of the plant enter into the composition as supposed by Dr. Paris, Mr. Brande, and others.

Rennie. Alphabet Med. Bot.

Oxalic acid.—M. Robiquet considers the following, as the best mode of manufacturing this acid on a large scale. Twelve kilogrammes of fecula, are to be divided among a number of tubulated retorts placed on the same sand bath; to this fecula is to be added 36 kilog. of the nitric acid of commerce, when the action has ceased, 12 additional kilog. of acid are to be added, and a slight heat employed. The fluid is to be poured into proper vessels and permitted to crystallize; the first product will be 2 kilog. 500 oxalic acid; the mother waters are to be united together, and 12 kilog. of nitric acid added at intervals. This will give 2 kilog. 250 of acid; The same operation is to be repeated a third and fourth time. The total product in purified acid will equal about half the fecula employed, requiring six times its weight of nitric acid.

Dict. de l'Industrie Manufac.

Succinic acid.—M. H. G. de Claubry states that succinic acid is often adulterated with tartaric acid or bisulphate of potash, to which a little oil of amber is added; as this is volatile, it is easy to separate it from these two bodies, and thus identify the fraud. It is also imitated with sal ammoniac and oil of amber; in this case both sublime, but by mixing the suspected mass with chalk, the ammonia will be readily detected by the smell. *Ibid.*

Pure Alcohol.—The following method of obtaining nearly absolute alcohol is said to give good results. An ox bladder is to be steeped in water well washed, cleaned from all extraneous matters, the uretes tied, turned inside out in order that the mucous lining may be removed. It is then to be inflated and dried, and one coat of fish glue given to the inside, and two to the exterior. When it is perfectly dry, it is to be filled with the alcohol to be concentrated, the neck tied, and the whole suspended over a stove or sand bath, so that it will be in a temperature of 100 to 120. If the alcohol used be 29° to 30° B., in three or four days it will become nearly anhydrous. A bladder thus prepared can be used for a great number of operations. When the alcohol marks 30° B., the outside of the bladder does not become moist, but when it is only at 16° or 18° it becomes very damp. After removing the alcohol, if it is wanted perfectly pure, it must be distilled to separate any organic matter it may have dissolved. *Ibid.*

Lead Colic.—M. Foucat has found the following formula successful in the treatment of lead colic. To a pint of water, add half an ounce of sulphuric alcohol, (elixir of vitriol,) two ounces of magnesia, and four ounces of syrup of gum ; this is to be used as a common drink, besides which, a draught composed of half an ounce of castor oil, as much lemon syrup, and a quarter of a grain of opium is to be given night and morning.

Journ. Hebdom.

Compound ointment of Ratanhy.—

R.	Pix. abiet.	8 parts.
	Terebenth venet.	2 "
	Cera. alb.	1 "
	Ext. Krameriæ.	2 "
	Sulph. alum et potas.	1 "

The pitch, turpentine, and wax are to be melted over a gentle fire, and the ratanhy and alum finely pulverised and well incorporated with the mixture. This plaster has been found beneficial when an astringent application of the kind is indicated. *Journ. de Chim. Med.*

Spontaneous crystallization of Morphine.—M. Storck mentions a spontaneous crystallization of morphine observed by him in a bottle filled about four-fifths with an anodyne tincture, which had stood for some time undisturbed. The morphine was in perfectly pure crystals, adhering to the sides of the bottle. He supposes that it had been first deposited in the form of an acetate. *Ibid.*

Paraguay Roux.—This celebrated anti-odontalgic tincture it is stated is formed as follows.

R.	Flor.	Inula bifrons	1 part.
	"	Spilanthus oleraceus	4 "
	Rad.	Anthem. pyreth	1 "
		Alcohol at 33° B.	8 "

The flowers and roots are to be contused and macerated in the alcohol for fifteen days, the fluid pressed out and filtered. The flowers of the Inula do not add in any way to the efficacy of the remedy, and might be replaced by saffron or any other aromatic. *Ibid.*

Lip salve.—

R.	Axunge	℥vii
	Butter of Cacao	℥ss
	White wax	℥ss
	Rad anchus	ʒii ℈ii
	Oil of roses	gtts. xvi

Journ. de Chim. Med.

Antidote to arsenic.—M. Blondel of Mer, (France,) has published a case in which the hydrate of the peroxide of iron was completely successful as an antidote in a case where about two drachms of arsenic had been taken. The poison was swallowed at 6, A. M. A physician saw the individual in about a quarter of an hour afterwards, and administered some glasses of sugar and water. M. Blondel visited him twenty minutes after the poison had been ingested, and ordered the hydrate of the peroxide of iron. This was made by treating the sulphate of the tritoxide with potash. As much as was furnished by six ounces of the sulphate was mixed with about forty pints of sugar and water, of this the patient took a tumbler every five minutes for three or four hours. After swallowing two or three doses, a vomiting ensued of about three ounces of fluid. Half an hour afterwards, there was copious vomiting and discharges from the bowels, which continued until 4 P. M. The patient recovered. He never experienced any pain. It should be noticed that no examination was made of the discharges. But the powder remaining in the tumbler in which the patient had mixed the dose, was ascertained to be arsenic.

Journ. de Chim. Med.

Preservative liquid.—M. Le Reboulet, conservator of the Museum of Nat. Hist. at Strasbourg, has given the following formula for a liquid for the preservation of anatomical preparations &c. This fluid is peculiarly applicable to the preservation of the brain. When any tissues kept in this solution, become hardened, as sometimes happens, they can be restored to their original flexibility by keeping them in fresh water for a short time :

R.	Water	16 parts.
	Chloride of lime	4 "
	Alum	2 "
	Nitre	1 "

Journ. de Pharm.

Action of diluted acids on sugar.—M. Malaguti, in an interesting memoir on this subject, has satisfactorily shown, that acids, whether organic or inorganic, when diluted, and with the assistance of heat, act in an identical manner on cane sugar. This is first transformed into grape sugar, then into ulmic acid, and if atmospheric air be present, into formic acid : when cane sugar is transformed into grape sugar, there is no need of any elevation of temperature, the acids acting without the aid of heat : that extremely diluted acids act in the same way, but more slowly : that the action of atmospheric air is necessary to the formation of formic acid, this change not taking place in vacuo : that the action of alkalies is identical with that of acids. *Ibid.*

Cosmetic liniment.—

R.	Ol. amyg. dulc.	℥i.
	Bals. Mecca.	ʒi.
	Sub. Carb. Potass.	ʒss.
	Aqua. Rosar.	℥iv.

mix in a mortar the balsam with the oil, add the potash, triturate for at least ten minutes, and gradually introduce the rose water.

Pharm. Elementaire.

Emetine.—M. Dumas is of opinion that pure emetine has never yet been obtained, and that what is so termed, in all probability contains a variety of different principles. *Traite de Chimie.*

Dentifrice.—The following electuary has obtained no inconsiderable reputation as a dentifrice.

R.	Bol. Armen.	61 parts.
	Pulv. Cinnamon	16 "
	Coccus Cact.	8 "
	Sulph. alum & potass	1 "
	Mel.	160 "
	Aqua.	8 "

The cochineal, water and alum are to be well triturated together, and left for a short time in a cool place to permit the colour of the cochineal to become perfectly developed; the Armenian bole, (or prepared chalk which may be substituted for it) and honey are to be added, and the whole thoroughly mixed, and afterwards scented with some essential oil.

Powder in Gonorrhea.—

R.	Pulv. Altheæ	
	" Glycirrh.	aa ʒiii
	Pulv. Nit. Potass.	ʒss
	Pulv. Camphor	ʒi

Divide into thirty powders, of which three are to be taken a day.

Foy. Cours de Pharmacologie.

Gelatine Capsules.—These are designed to render the administration of certain disagreeable medicines less repugnant to the patient, and were invented by M. M. Dublanc, Sr., and Mothes. They are formed of gelatine sweetened with a little sugar, and are made by means of an instrument consisting of a hollow, much elongated cone, bent towards its point, and terminated by a tube, to which is attached with a waxed thread, a small pouch of a round form, made of fine skin. The base of the cone is closed by a cover which screws on. To use this instrument, a sufficient quan-

tity of mercury is poured into the cone to fill the pouch; this which is now a solid ball, is plunged for a short time into a concentrated solution of sweetened gelatine, and then placed in a heated stove in a vertical position.

The first layer being dry, another is to be applied in the same manner, then a third &c. After a sufficient thickness has been attained, the cone is reversed, the mercury flows out of the pouch, and this becoming collapsed, permits the removal of the capsule. Into this can now be introduced any medicine that will not dissolve the gelatine, in doing this, care must be taken to preserve the exterior of the capsule from any contact with the contained substance.

To close the opening, a thin lamina of gelatine cut in a circular form is to be placed on it; having previously softened this cover by means of steam, to render it perfectly adherent, a solution of gelatine is to be applied to the edges with a camel's hair brush. If kept in a dry place, capsules thus prepared will keep for a long time.

Cottereau. Traite de Pharmacologie.

Nitro-sulphate of ammonia.—M. Magendie states that he has used this preparation with the following results: 6 grains dissolved in water injected into the veins of dogs, caused only a temporary affection of the brain. In doses of 12 grs. administered in the usual way, it produced no apparent result.

Whether by a fortuitous concurrence of circumstances, or from the peculiar action of this remedy, all the patients in the Hotel Dieu affected with typhoid fevers, to whom it was administered in doses of 12 grs. dissolved in water, speedily recovered. The total quantity taken by each was about one drachm. *Journ. de Pharm.*